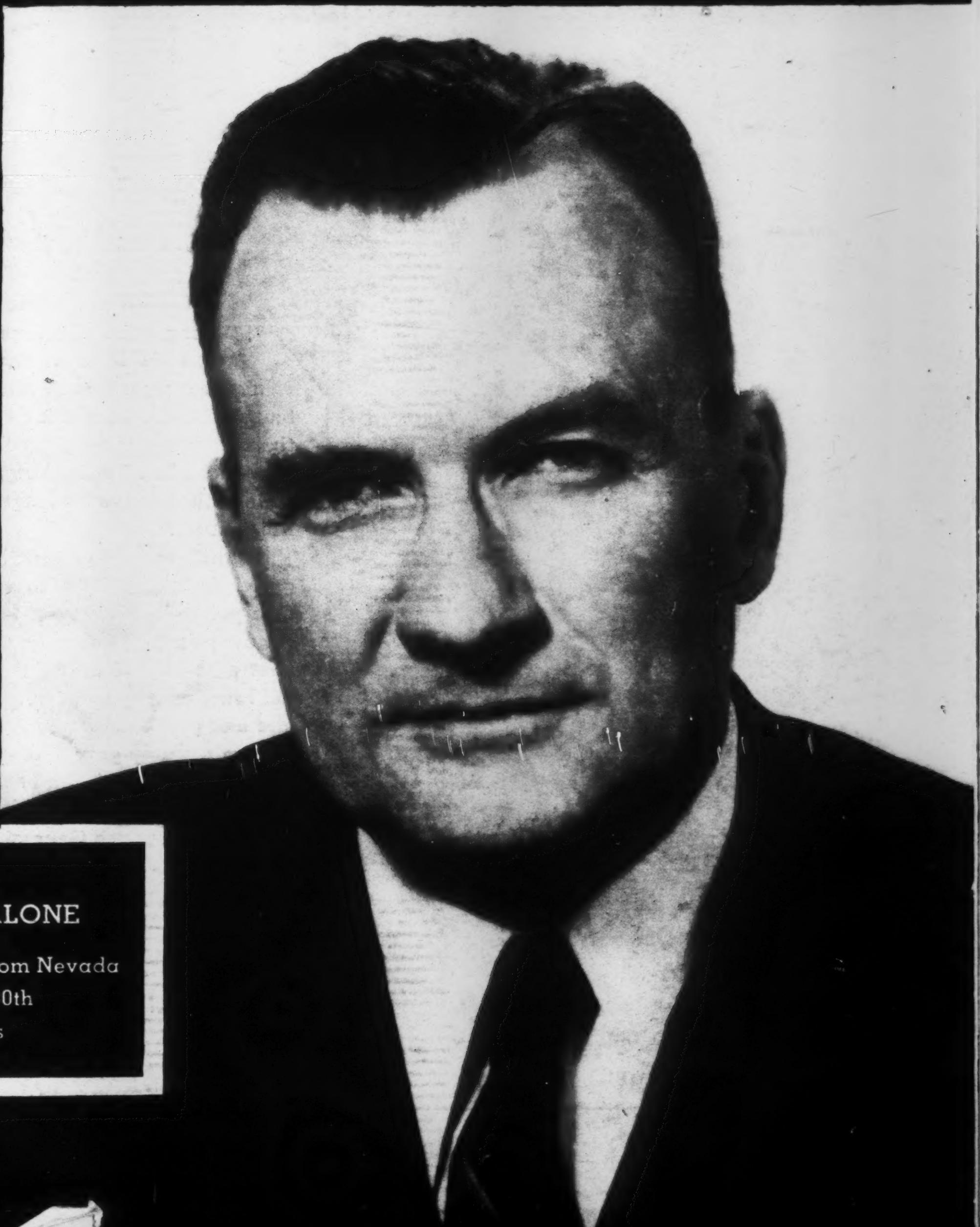
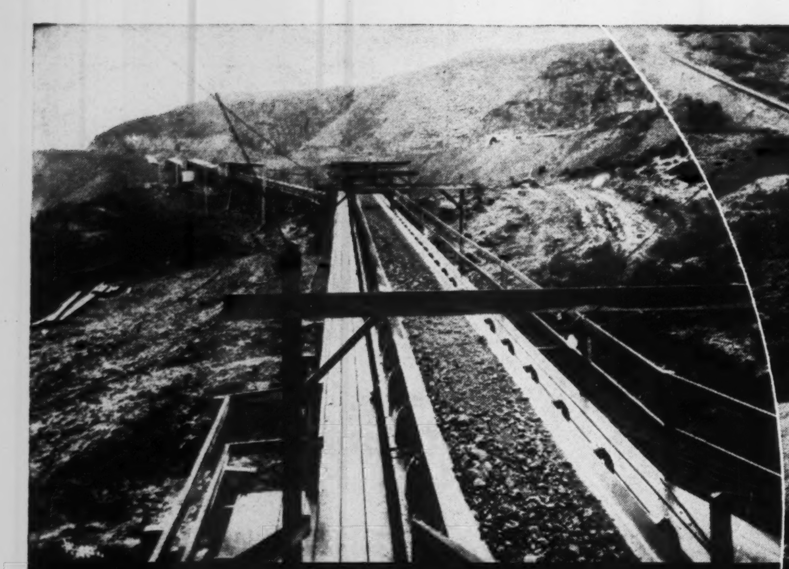
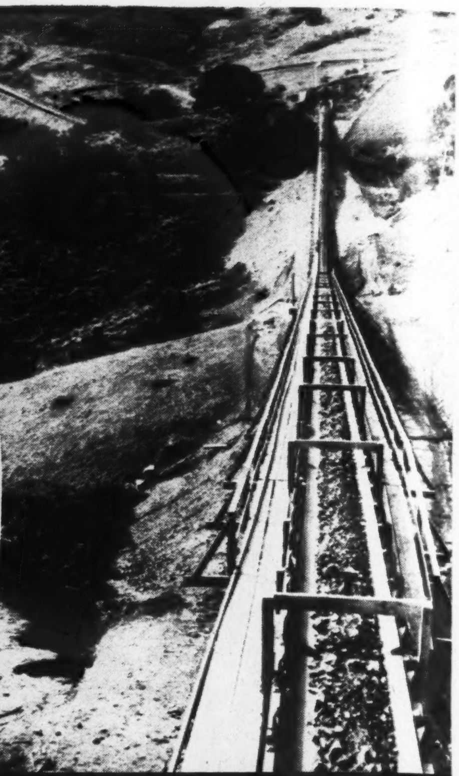
ENGINEERING NEWS-RECORD



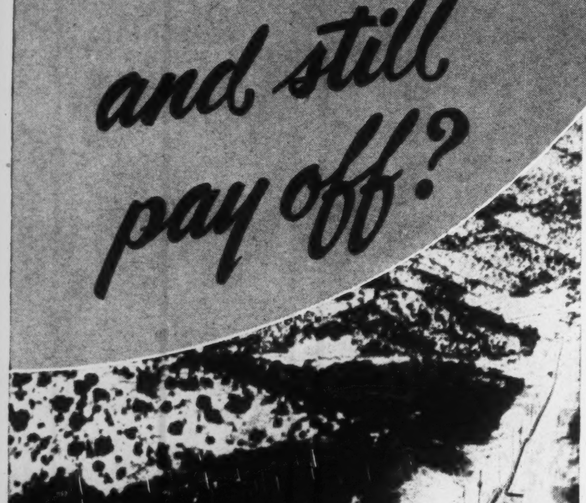
GEORGE W. MALONE

Civil engineer - senator from Nevada
takes his seat as 80th
Congress meets


GRAND COULEE . . . 2 MILES


SAN JOSE . . . 4 MILES

HOW LONG CAN A CONVEYOR BE . . *and still pay off?*


SHASTA . . . 10 MILES

On large construction projects, conveyors have long been the accepted tool for moving bulk materials in a continuous flow over short and medium distances . . . but how about relatively long hauls? Based on present data, 30 to 50 miles is probably the economic limit—one conveyor now under consideration would be 38 miles long, and there is every reason to believe that conveyor lengths may reach 50 miles in the near future.

Regardless of the length to which conveyors may grow, their electrification will not be a limiting factor. One-point electric control for the entire conveyor system is now possible, as well as electrical interlocking to prevent piling-up of material at flight junctions. On downhill runs, conveyor drive motors can function as generators and pump power back into the line . . . one conveyor system actually generated more power than it consumed, once it was placed in motion.

Conveyors are just one of many electrified construction tools on which General Electric engineers are working in co-operation with equipment manufacturers and contractors to speed construction and keep initial, operating, and maintenance costs at a minimum. Ask your G-E representative how electrification of your construction equipment can help you make a better product at lower cost. *General Electric Company, Schenectady 5, N. Y.*

GENERAL ELECTRIC

655-57-162

News of the Week

ENGINEERING NEWS-RECORD • JANUARY 2, 1947 • VOLUME 138 • NUMBER 1

Construction tops $10 billion for near-record 1946 volume

Year-end figures show more than half of total was engineered work—Costs rise 18 percent over 1945—Earthwork, highway construction set new records

The estimated total value of all construction—including one and two-family housing—during 1946 was placed at $10,000,000,000 last week in year-end figures compiled by *Engineering News Record.*

The total includes more than $5,176,000 in engineering construction, in itself a 126 percent increase in dollar volume over 1945 and representing the fastest rate of increase over a preceding year ever recorded.

The ten-billion dollar total figure is the fifth largest construction year on record. It was exceeded in 1928, when $10,580,000,000 was recorded; in 1929 at $10,377,000,000; in 1941, at $11,396,000,000, and in 1942, at $12,821,000,000.

Construction costs by December had increased 18 percent over December, 1945, and building costs had gone up 16 percent as measured by quoted prices and hourly wage rates used in the *ENR* Construction and Building Cost indexes. This sharp rise in costs of construction held the volume index (measuring construction compared with 1900 = 100) to 250 for 1946, but this figure in itself was a 103 percent increase over 1945 and an all-time record for rate of increase in physical volume of construction put under contract.

Highest peacetime year

The $5,176,000,000 total for engineering construction is the highest volume for any peace year. It has been exceeded only twice—by $5,869,000,000 in 1941, and by $8,006,000,000 in 1942.

Statisticians commented that the year's combination of materials shortages, governmental restrictions, black market prices and other restraints had kept a large volume of construction out of the market and had caused more uncompleted work than normal to be carried over into the 1947 construction period figures.

All-time records

Several all-time volume records were established in the year, notably for commercial buildings, including mass housing which topped $1,846,000,000 compared with the previous record, in 1929, of $1,670,000,000. Private industrial building construction exceeded $1,113,000,000—a 76 percent gain over the previous record in 1945. This gain was made in spite of heavy governmental restrictions on this class of construction.

Earthwork, irrigation and drainage broke all existing records, with $327,605,000 being assigned to it, as compared to $268,000,000 for the previous high year of 1938. This record, *ENR's* Business News Staff estimates would have been higher except for the moratorium on federal construction in August, caused by President Truman's drive for federal economies.

Highway construction broke all previous marks with a $769,000,000 volume, compared with the previous high of $678,000,000 in 1940. Here too a large volume of uncompleted work is being carried over into 1947.

Waterworks construction, handicapped by pipe shortages, ended the year with a $109,000,000 volume—the fourth largest on record. High year in this category was 1942, when volume reached $163,000,000.

SEE $22 BILLION FOR 1947

In a preliminary release of its estimates for 1947 construction put-in-place, the Department of Commerce last week predicted that the industry would reach a record-breaking $22,000,000,000. The total, however, includes some carry-over, and about $6,075,000,000 in maintenance and repairs. The department said it would release more detailed figures during the first week of January.

Concurring to a great extent in this estimate, the Associated General Contractors of America, Inc., predicted $20,000,000,000 for 1947, but said that about $5,000,000,000 of this would be carry-over from uncompleted work started in 1946.

Engineering News-Record's statisticians have estimated 1947 new construction—exclusive of maintenance and repairs—at about $12,000,000,000.

◆

Boston consultants design Alaska airbase facilities

A $100,000,000 Alaskan air defense project to put war-built airfields on a peacetime basis is being planned by the Boston, Mass., engineering firm of Fay, Spofford & Thorndike, it was disclosed recently. On the eleventh floor of the Chamber of Commerce Building in that city more than 100 engineers and draftsmen are working on the ideas, planning and specifications for this great aviation expansion development.

The organization had long experience in airbase construction in Arctic regions during the war. Among its achievements are construction work for the Army Air Forces at Goose Bay, Labrador; Fort Pepperell at St. John, Newfoundland; Harmon Field, Argentia, Newfoundland; and the bases near the Greenland icecap.

Carroll A. Farwell, a partner of the firm, and William L. Hyland, chief engineer, are supervising the work. Mr. Hyland recently returned from an inspection tour of the work at Ladd Field near Fairbanks, and Richardson Field about three miles from Anchorage.

"We are making these bases, which were hurriedly constructed during war, into permanent airfields," he said. "Runways are being extended to accommodate the largest aircraft. Most of our efforts are being devoted to the building of permanent housing for army personnel."

He said that warehouses are being built of steel and cement construction.

NEWS IN BRIEF

In telegraphic form, here are latest news developments on the engineering and construction front during the week.

Construction—The Southern Baptist Convention has new building and repair projects under consideration for about 13,000 churches, eventually totaling $250,000,000. . . . Oklahoma Gas & Electric Co., *Oklahoma City*, plans a $2,500,000 expansion program for its power plant. . . . Work has begun on the 14-story $2,000,000 Hermann Professional Building at *Houston, Tex.* . . . Projected industrial, residential and public construction in *Natchez* and *Adams County, Miss.*, is estimated at about $20,000,000. . . . Work is under way on an addition to the Utica & Mohawk Cotton Mills plant at *Seneca, S. C.* . . . Architects are preparing plans for a $2,000,000, 12-story hotel at *Savannah, Ga.* . . . A $2,200,000 trucking terminal to serve 47 motor carriers at *Atlanta, Ga.*, has been recommended to city officials by the State Highway Department. . . . Plans for a $2,000,000 hospital for children at *Houston, Tex.*, have been announced by Dr. E. W. Bertner, president of the Texas Medical Center. . . . $3,000,000 of improvements for the 7-story Lincoln building at *Portland, Ore.*, have been announced. . . . The *Peoria, Ill.*, Municipal Airport will be the site for a $2,500,000 National Guard air installation for the 169th Fighters' Squadron. . . . Pacific Paper Co. is awaiting a permit to build plants costing over $1,000,000 at *San Bernardino, Calif.* . . . Building permits at *Spokane, Wash.*, reached an all-time high of $13,694,517 in 1946, while in *Houston, Tex.*, they reached over $50,000,000. . . . A new hotel, a telephone plant, and two housing colonies at *Fredericton, N. B.*, will involve over $2,500,000. . . . Plans for a $1,000,000 hotel at *Harlingen, Tex.*, are being prepared by Frank Lloyd Wright. . . . A request for federal aid of $1,724,798 has been made to improve airport facilities at *Buffalo, N. Y.* . . . Sam E. Wilson, Jr., will build a $1,000,000 causeway to join the mainland and *Mustang Island* on the Texas gulf coast. . . .

School Buildings—A $825,000 bond issue is proposed by the board of education at *Muskogee, Okla.* . . . Voters at *Redonda, Calif.*, have approved a $1,133,000 school bond issue. . . . Vanderbilt University at *Nashville, Tenn.* will build a $1,500,000 gymnasium. . . . Work is to begin at once in Oklahoma on several state buildings, including a girls' training school at *Taft* and one for boys at *Helena*. . . . Work has started on a 600-man dormitory at the University of Tennessee, *Knoxville*. . . . *Georgia* will build 16 units in its university system to cost $13,359,000. . . . University of Illinois will erect a new health and physical education building at *Urbana* to cost $4,500,000. . . . Cost of the new Mayo medical center at the University of Minnesota, *Minneapolis*, will be $5,000,000.

Highways—At *Jackson, Miss.*, seven street paving projects were completed in 1946. . . . This year almost $6,000,000 of contracts on Central Boulevard construction at *Dallas, Tex.*, will be let. . . . *Arizona* built and contracted for over $6,650,000 worth of roads last year. . . . *Erie County, N. Y.*, has approved the Buffalo area program of the State Public Works Department for an estimated $69,000,000 expenditure for throughway and arterial highway projects. . . . From Oct. 17 to Dec. 11 the Pennsylvania Department of Highways awarded 30 contracts for highway improvements to cost $8,025,060.91. . . . Connecticut State Highway Department is receiving bids till Jan. 20 for construction of the high level toll bridge over the Connecticut River between *Old Lyme* and *Old Saybrook*. . . . *Georgia* Highway Department placed $23,226,083 in road construction under contract in 1946. . . . Fast nearing completion are plans for a 7-mile road between *Sturbridge* and the Massachusetts-Connecticut state line near *Union, Conn.*, to link Massachusetts superhighways with those nearing completion in Connecticut. . . . Next month work is to start on the $1,250,000 Clearwater River bridge at *Lewiston, Ida.*

Sewers—A planned long-term sewer system improvement at *Indianapolis, Ind.*, may cost $35,000,000. . . . The first phase of the Buffalo River anti-pollution program at *Buffalo, N. Y.*, has been completed. . . . The *Indiana* Stream Pollution Control Board has issued final orders to 27 industries and six cities to end pollution. . . . A federal advance grant of $108,000 has been approved for an engineering survey for the proposed $4,777,500 sewage disposal plant at *Chattanooga, Tenn.* . . . It is estimated that $10,000,000 would be needed to take care of all sewerage needs of the *Pensacola, Fla.*, sanitary district. . . . *Columbus, Ohio*, has been given two years to build a $2,000,000 extension to its sewage treatment works.

Water supply—Water plant improvements at *Ft. Lauderdale, Fla.*, will cost a million dollars. . . . *Eugene, Ore.*, water board has announced a 1947 budget of over $5,000,000 for improvements. . . . Authority has been granted for a $358,730 water treatment plant at *Gainesville, Fla.* . . . Plans at

Producers' Council names technical consultant

A. Gordon Lorimer, who resigned Dec. 31 as chief of the Bureau of Architecture, Department of Public Works, New York City, has been named technical consultant to the Producers' Council, national organization of building products manufacturers.

Mr. Lorimer will coordinate the Council's research and technical activities, serve as chairman of the organization's committee on building codes, and supervise the designing of industry-engineered homes being developed by the council.

Canadian construction reports gains for year

Work performed by the Canadian construction industry last year amounted to $370,776,000. The comparative figure for the preceding year was $308,678,000. Residential construction, single dwelling units, was $77,065,000 compared with $50,771,000 in 1944.

Hospital construction was valued at $13,849,000 as against $8,803,000; apartment dwellings, $9,784,000, against $9,462,000 in preceding year; and schools, $8,924,000 as compared with $7,437,000.

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Outline six-point federal housing plan to relieve shortage, aid contractors

Summary of plans for 1947 indicates ending of premiums, increasing imports, simplified procedures

As 1947 gets underway, the federal government plans to follow a 6-point program aimed to relieve the housing shortage and to provide considerable assistance to contractors on housing work. Non-residential construction will continue to be restricted somewhat —probably at $50,000,000 weekly in the early months as compared to $35,000,000 at the end of 1946. (*ENR* Dec. 26, 1946, vol. p. 845).

The six major aids now planned, with the President's backing, are:

(1) Continuation in early 1947 of premium payments for production of critical materials; (2) Extension of guaranteed markets for factory-produced houses; (3) Increase of RFC loans to prefabricators and producers of building materials; (4) Broadened use of insured mortgage financing to aid housing construction; (5) Continued disposal of surplus construction supplies and equipment needed for residential work in a manner to aid housing projects, and (6) Increased imports of building materials and continued restriction on exports of construction supplies.

In relaxing construction controls Dec. 14, the President approved a plan whereby anyone, either veteran or non-veteran, may construct a home (*ENR* Dec. 19, 1946, vol. p. 823). However, new homes must be built for year-round occupancy and total floor area is limited to not over 1,500 sq. ft.—exclusive of open porches, garages, and unfinished attics. Also, only one bathroom may be finished in a new home, although another bathroom may be "roughed in" if the fixtures are not installed.

The premium payment to increase production of softwood-plywood was discontinued Nov. 30, and those for greater production of hardwood flooring were ended Dec. 31, because production of these materials had increased appreciably in recent months. For example, the output of hardwood flooring throughout the country in October of 1946 had climbed to 39 million b. ft., which compares with a monthly average of 26 million b. ft. during the first six months of the same year.

In contrast, the production of a number of important materials is much lower than desired, and premium payments will continue, for a time at least, for these items. These premium contracts are only effective for outputs above previous totals. The payments for increased production now in force include: $5 per thousand for structural clay products; $40 per ton for merchant gypsum liner; 10 cents per sq. ft. for convectors; $40 per ton for Saturday production of cast iron soil pipe; $5 per thousand for sand-lime brick; and qualified payments for housing nails and merchant pig iron.

At present the premium payments for convectors are scheduled to end Jan. 31, but the termination date for some payments has been set as distant as June 30, 1947.

Added guaranteed output possible

Extension of the guaranteed sale for the production of factory-built houses is also planned.

As 1947 starts, five contracts for guaranteed markets for production of this type of dwelling are in force. One contract calls for the Knox Corp., Thomson, Ga., to produce wood-plywood houses, to sell at $5,550 for a 2-bedroom house and $7,400 for a 3-bedroom unit, including land. A production of 6,000 units is planned in 1947 with the government guaranteeing payment of 90 percent of the cost for 2,000 of the units if they are not sold.

Substitute—*Spurred by shortages of steel pipe, the San Diego, Calif., Gas and Electric Co. is experimenting with plastic tubing to connect gas lines to domestic meters. Made of cellulose acetate butyrate, the tubing is extremely light in weight, and has the advantages of being impervious to moisture, acids and alkalis. Tests show the tube withstands pressures up to 550 lbs. Union of tubing and steel connections to gas mains is made by forming a lip to fit over the steel and placing over this a sleeve to create pressure fitting. Tube sections are joined by special plastic sleeves.*

Under a similar agreement, American Fabricators, Louisville, Ky., is turning out stressed-skin plywood houses of 2-bedroom size to sell for $6,800, including land. This company plans an output of 7,500 dwellings this year with the sale of 2,000 guaranteed.

Wm. H. Harman Corp., Philadelphia, Pa., has a contract for the production this year or 6,000 to 7,000 steel houses of two and three bedrooms. This firm's entire 1947 scheduled production of 10,000 units is guaranteed and the plan is to sell the homes, including the lots, at $6,000 to $7,500.

The Homeola Corp., Chicago, Ill., will also continue the production of two models of plywood homes. This firm hopes to produce 19,400 units in 1947 at a cost of $5,400 to $6,400 with land—a market for about one-third of the output being guaranteed.

The fifth guaranteed contract in force is that of the General Panel Corp., Los Angeles, for the production of 2-bedroom plywood houses to sell for $5,875. This producer is planning to turn out 8,500 units this year with a market assured for 2,500 units.

In addition to the guaranteed markets for factory-built homes, the federal government, through the Reconstruction Finance Corporation, is making loans to this type of producer for such work under the heading of plant expansion. Loans are also being made to the manufacturers of new building materials, as well as to producers resuming operation of such plants as closed brick kilns. As of Nov. 30, RFC had loaned a total of about $4,000,000.

Surplus materials into housing

To further aid housing, the federal agencies will continue to dispose of surplus building materials and equipment suitable for housing construction in a manner to favor this type of work. Under this plan, Expediter Certificates are issued to aid builders, contractors, and prefabricators, plus utilities, in obtaining surplus materials. The special certificates may be obtained from the regional offices of the housing expediter.

Closely allied with the diversion of surplus materials is the plan to utilize as effectively as possible surplus military and war structures. In removing such facilities, care will be exercised to permit these buildings to be used for housing, rather than for such

(*Continued on page* 8)

DEVELOPMENTS BEYOND U. S. BORDERS

Digested from reports by Engineering News-Record correspondents and the McGraw-Hill World News Bureau

India expands plans for vast development of power resources in eastern part of country—Start work on $12 million dam and power development for Scotland — Begin reconstruction of bridge at Budapest—Russia builds new steel plant in Georgia

India—Three large-scale hydro-electric power projects—one of them nearly the scope of America's TVA and another to include a dam higher than Boulder—have been given top priority by the Indian government in its drive for greater industrialization and the development of natural resources.

Furthest advanced of the three projects is in the valley of the Damodar River, west of Calcutta (*ENR* May 9, vol. p. 754). Eventually to consist of seven dams and a diversion structure across the Damodar and its tributaries on the border between Bengal and Bihar provinces, the project has progressed to complete planning for three of the dams, and soil tests and subsurface explorations are now underway under supervision of the Royal Indian Army engineers.

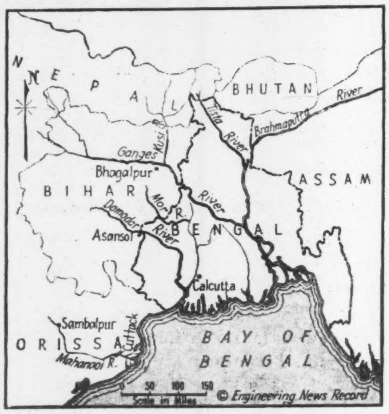
The first dam in the project will be built at Maithon—just west of the Bengal-Bihar border—an earth-fill structure about two and one-quarter miles long. Maximum height above river bed will be 160 ft., the dam to consist of some 5,000,000 cu. yd. of earth fill and 500,000 cu. yd. of concrete for spillway, cut-off wall and powerhouse. The power plant will contain an eventual 40,000 kw. installation.

The second of the three dams called for under initial plans will be built about 35 miles upstream from Maithon, and will be of rock-fill, faced with either clay or a flexible concrete blanket. A third dam will be built five miles above the second—this one to be built by hydraulic fill.

Sites have not yet been selected for other structures in this system. Government engineers estimate that the total cost of the work, planned over a 10-year period, will approximate $165,000,000, and that the system will produce 200,000 kw. of electric power and add about 800,000 acres of irrigated land to the district's available farmlands. Navigation facilities, to improve water communications between the rich coal fields around Raniganj and Calcutta, are also included.

Kusi River project

On the Kusi River, a tributary of the Ganges, Indian officials plan a similar multi-purpose project, which will include one major dam and two smaller diversion dams.



© Engineering News Record

Power Plans—*India's expanding plans for self-sufficiency through industrialization and through additional irrigation are reflected in three important power projects details of which have been announced recently.*

The dam will be built across the Chhatra Gorge in Nepal, just above the confluence of three smaller streams which form the Kusi (see accompanying map). Behind its 750-ft. face will be impounded 10,600,000 ac.ft. of storage water.

Below this dam, but still in Nepal, there is to be built a diversion structure to control the river channel and provide irrigation water, and further down, above the river's confluence with the Ganges, a similar diversion dam will be built.

The total cost of this project—also planned for completion over the 10-year period—is placed at $150,000,000.

Mahanadi River work

The third major project—the Mahanadi River scheme in Orissa Province—is still pending until the provincial government can complete financial arrangements for the $160,000,000 project under discussion.

Studies have indicated that three dams should be built—the first at Hirakud near Sambalpur.

When the three projects are completed, it is likely that India's industrial map will undergo some sharp revisions, with great development expected to outdistance the present industrial areas centering around Bombay.

Great Britain—The North of Scotland Hydro-Electric Board recently announced it had awarded contracts totalling more than $12,000,000 for work on its project at Loch Sloy, about 35 miles due north of Glasgow, near the town of Strathyre.

The project involves construction of a buttress-type concrete dam, 1,160 ft. long and with a maximum height of 165 ft.; the driving of a 1¾-mi. tunnel through the mica schist of Mount Vorlich; penstocks, and a power station at Inevruglas, on the shores of Loch Lomond. Also involved is construction of some 2½ mi. of road and a construction camp to house some 2,500 workers.

The tunnel will be horseshoe-shaped in section, 15 ft. 4 in. in diameter, and lined with concrete, and plans also call for a surge shaft at the Loch Lomond end that will be 26 ft. in diameter and about 273 ft. high, and a subsidiary tunnel about a mile long, 6 ft. wide and 7 ft. deep to divert the waters of a small mountain stream to the top of the surge shaft.

Bridges . . . .

Hungary—According to *Civil Engineering* (London, October, 1946), work has started on the permanent reconstruction of the Franz-Josefs bridge over the Danube River at Budapest. This steel cantilever, dating from 1897, will be the first of the city's famous and beautiful bridges, wrecked during the war, to be restored to service. The work was begun by raising the right-hand anchor span, and at the present time, two large floating cranes are being employed to salvage the 574-ft. center span.

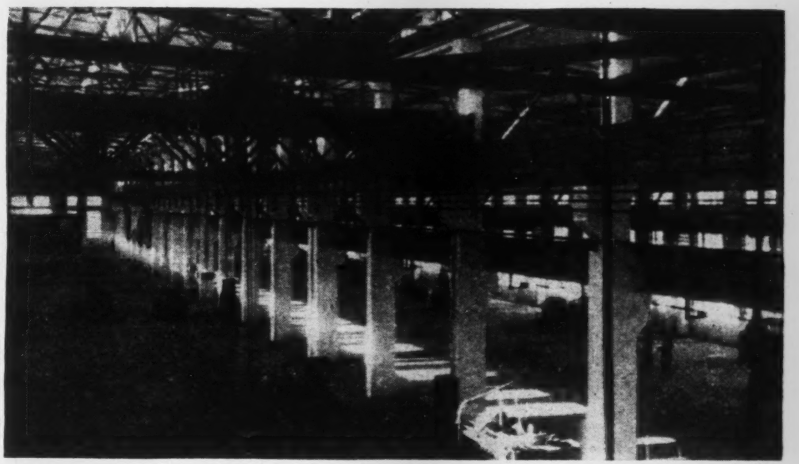
The Horthy Bridge, a continuous truss with a water span of 500 ft. completed in 1937, will also be rebuilt in its original design, provided that the damage revealed when the span is raised permits.

The Margaret Bridge, a spandrel arch of 288 ft. constructed in 1876, is next on the rebuilding list, and it will be replaced by a reinforced concrete structure to be erected on the original piers.

Work has begun already and it is hoped to complete the reconstruction by the end of 1948.

Work on the new Arpad Bridge was stopped by the war. All of its piers and abutments are completed, but two-thirds of the superstructure remains to be built.

Reconstruction of the Elizabeth and Old Chain eyebar suspension bridges is said not to be possible at present. Both of these structures were regarded as among the beautiful bridges of the world. The Elizabeth Bridge, built in 1903 with a span of 951 ft. having ornate steel towers and huge architectural stone anchorages, while the 663 ft. span of the Old Chain Bridge dating from 1849 is carried by massive stone towers. It is hoped that the latter bridge can be built in its original form.



Sovfoto

Steel Plant—*To provide the southern soviet republic of Georgia with its own source of steel and metal products. Russia is pushing completion of the mammoth Transcaucasian Iron and Steel Works. Machine shop, above, will service the plant and provide machined parts for general industry.*

Steel . . . .

Russia—More than 20,000 construction workers are now employed on a site about 15 miles north of Tbilisi, in southern Georgia, working to build the Soviet Republic's first iron and steel processing plant which will be known as the Transcaucasian Iron and Steel Works.

On its completion in 1950, the plant is expected to produce annually half a million tons of steel, the same amount of rolled metal, 430,000 tons of pig iron, and other forms of metal. Mine areas in Georgia and in the adjoining Iranian province of Azerbaijan produce coal and excellent iron ore to feed the plant.

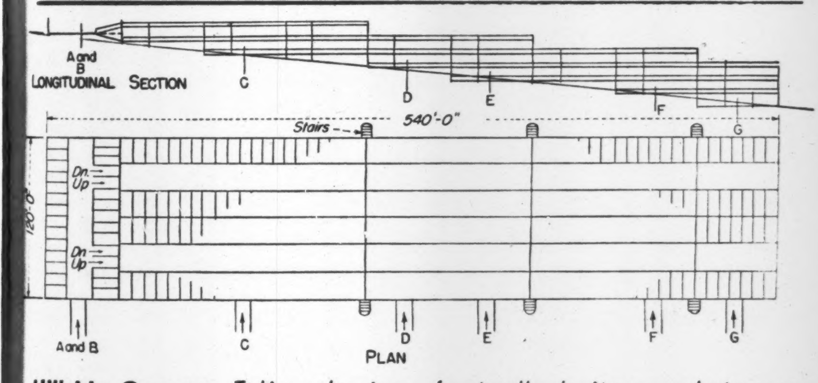
The construction site extends over several miles, and will include a blast furnace, open hearth furnaces, a rolling mill, machine shops and auxiliary buildings. To house workers at the new plant, a new town—to be known as Rustavi—is being built for an expected population of about 50.000.

Cement . . . .

Mexico—In a move to destroy a thriving black market in cement, government controls on sales of the product throughout Mexico—imposed as a wartime measure in June, 1944—have been removed by Congressional approval of a bill sponsored by President Miguel Aleman, new chief executive.

The measure was introduced by Juan Lascurain, a civil engineer and a member of Congress, who told legislators that removal of official controls on cement production and sales would increase available supplies and end the black market.

Meanwhile, one Mexican construction firm reported it had gone as far afield as Poland to obtain cement. The firm —Fomento Industrial C.A. of Juarez, said a ship loaded with Polish portland cement is expected to call at Veracruz, Tampico and Puerto Mexico early this month to offer the cement at about $30 per metric ton—well below the present black market price.



Hillside Garage—*Taking advantage of naturally sloping ground at a proposed parking site in downtown Melbourne, Australia, Prof. Leslie Wilkinson, dean of the Faculty of Architecture, Sydney University, designed a multi-tiered, unwalled structure with entry to each deck available from ground level. Utilization of the slope renders unnecessary the construction of ramps and the use of mechanical gear. Steel and concrete deck construction, open at sides and ends, provide for natural lighting. Capacity of 736 cars is spread over the seven decks shown in drawings above, each deck accommodating 28 to 164 vehicles.*

Miscellany . . . .

Egypt—Payne Field, U. S.-built air-base near Cairo, recently was turned over to the Egyptian government, and renamed Farouk Field, in honor of the ruler.

Payne Field was originally opened Oct. 30, 1943, and had a top complement of 2,000 enlisted men and 367 officers during peak operations in 1944.

Sweden—An elaborate project for an oil pipeline across Sweden from Gothenburg to Stockholm was recently proposed by the Gothenburg Port Authority, and is now under scrutiny by a special government committee. The proposal suggests two all-welded steel lines, one 8 in. in diameter for heavy oil, and one 4 in. in diameter for gasoline, to transport two million tons of fuel annually. Cost of the project is estimated at $5,500,000. Total length would be 396 miles.

DEVELOPMENTS BEYOND U. S. BORDERS

Digested from reports by Engineering News-Record correspondents and the McGraw-Hill World News Bureau

India expands plans for vast development of power resources in eastern part of country—Start work on $12 million dam and power development for Scotland — Begin reconstruction of bridge at Budapest—Russia builds new steel plant in Georgia

India—Three large-scale hydro-electric power projects—one of them nearly the scope of America's TVA and another to include a dam higher than Boulder—have been given top priority by the Indian government in its drive for greater industrialization and the development of natural resources.

Furthest advanced of the three projects is in the valley of the Damodar River, west of Calcutta (*ENR* May 9, vol. p. 754). Eventually to consist of seven dams and a diversion structure across the Damodar and its tributaries on the border between Bengal and Bihar provinces, the project has progressed to complete planning for three of the dams, and soil tests and subsurface explorations are now underway under supervision of the Royal Indian Army engineers.

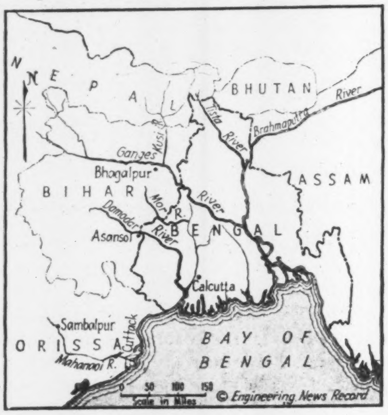
The first dam in the project will be built at Maithon—just west of the Bengal-Bihar border—an earth-fill structure about two and one-quarter miles long. Maximum height above river bed will be 160 ft., the dam to consist of some 5,000,000 cu. yd. of earth fill and 500,000 cu. yd. of concrete for spillway, cut-off wall and powerhouse. The power plant will contain an eventual 40,000 kw. installation.

The second of the three dams called for under initial plans will be built about 35 miles upstream from Maithon, and will be of rock-fill, faced with either clay or a flexible concrete blanket. A third dam will be built five miles above the second—this one to be built by hydraulic fill.

Sites have not yet been selected for other structures in this system. Government engineers estimate that the total cost of the work, planned over a 10-year period, will approximate $165,000,000, and that the system will produce 200,000 kw. of electric power and add about 800,000 acres of irrigated land to the district's available farmlands. Navigation facilities, to improve water communications between the rich coal fields around Raniganj and Calcutta, are also included.

Kusi River project

On the Kusi River, a tributary of the Ganges, Indian officials plan a similar multi-purpose project, which will include one major dam and two smaller diversion dams.



Power Plans—*India's expanding plans for self-sufficiency through industrialization and*

When the three projects are completed, it is likely that India's industrial map will undergo some sharp revisions, with great development expected to outdistance the present industrial areas centering around Bombay.

Great Britain—The North of Scotland Hydro-Electric Board recently announced it had awarded contracts totalling more than $12,000,000 for work on its project at Loch Sloy, about 35 miles due north of Glasgow, near the town of Strathyre.

The project involves construction of a buttress-type concrete dam, 1,160 ft. long and with a maximum height of 165 ft.; the driving of a 1¾-mi. tunnel through the mica schist of Mount Vorlich; penstocks, and a power station at Inevruglas, on the shores of Loch Lomond. Also involved is construction of some 2½ mi. of road and a construction camp to house some 2,500 workers.

The tunnel will be horseshoe-shaped in section, 15 ft. 4 in. in diameter, and lined with concrete, and plans also call for a surge shaft at the Loch Lomond end that will be 26 ft. in diameter and about 273 ft. high, and a subsidiary

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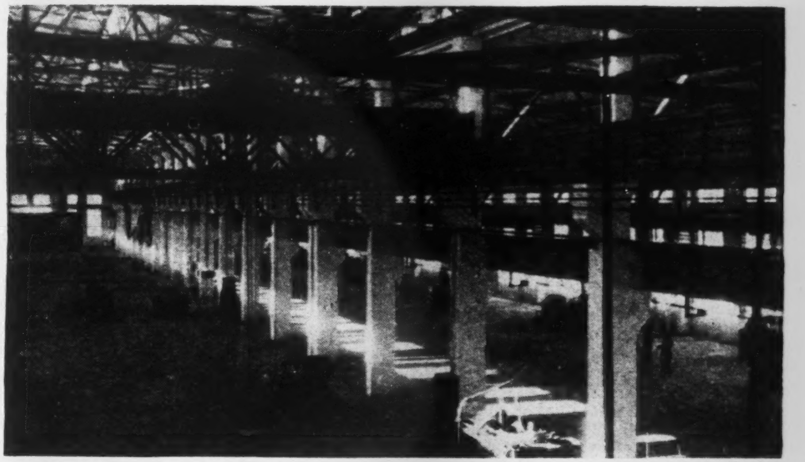
Work has begun already and it is hoped to complete the reconstruction by the end of 1948.

Work on the new Arpad Bridge was stopped by the war. All of its piers and abutments are completed, but two-thirds of the superstructure remains to be built.

Reconstruction of the Elizabeth and Old Chain eyebar suspension bridges is said not to be possible at present. Both of these structures were regarded as among the beautiful bridges of the world. The Elizabeth Bridge, built in 1903 with a span of 951 ft. having ornate steel towers and huge architectural stone anchorages, while the 663 ft. span of the Old Chain Bridge dating from 1849 is carried by massive stone towers. It is hoped that the latter bridge can be built in its original form.



Sovfoto

Steel Plant—*To provide the southern soviet republic of Georgia with its own source of steel and metal products. Russia is pushing completion of the mammoth Transcaucasian Iron and Steel Works. Machine shop, above, will service the plant and provide machined parts for general industry.*

Steel . . . .

Russia—More than 20,000 construction workers are now employed on a site about 15 miles north of Tbilisi, in southern Georgia, working to build the Soviet Republic's first iron and steel processing plant which will be known as the Transcaucasian Iron and Steel Works.

On its completion in 1950, the plant is expected to produce annually half a million tons of steel, the same amount of rolled metal, 430,000 tons of pig iron and other forms of metal. Mine

several miles, and will include a blast furnace, open hearth furnaces, a rolling mill, machine shops and auxiliary buildings. To house workers at the new plant, a new town—to be known as Rustavi—is being built for an expected population of about 50,000.

Cement . . . .

Mexico—In a move to destroy a thriving black market in cement, gov-

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Miguel Aleman, new chief executive.

The measure was introduced by Juan Lascurain, a civil engineer and a member of Congress, who told legislators that removal of official controls on cement production and sales would increase available supplies and end the black market.

Meanwhile, one Mexican construction firm reported it had gone as far afield as Poland to obtain cement. The firm —Fomento Industrial C.A. of Juarez, said a ship loaded with Polish portland cement is expected to call at Veracruz, Tampico and Puerto Mexico early this month to offer the cement at about $30 per metric ton—well below the present black market price.

Miscellany . . . .

Egypt—Payne Field, U. S.-built airbase near Cairo, recently was turned over to the Egyptian government, and renamed Farouk Field, in honor of the ruler.

Payne Field was originally opened Oct. 30, 1943, and had a top complement of 2,000 enlisted men and 367 officers during peak operations in 1944.

Sweden—An elaborate project for an oil pipeline across Sweden from Gothenburg to Stockholm was recently proposed by the Gothenburg Port Authority, and is now under scrutiny by a special government committee. The proposal suggests two all-welded steel lines, one 8 in. in diameter for heavy oil, and one 4 in. in diameter for gasoline, to transport two million tons of fuel annually. Cost of the project is estimated at $5,500,000. Total length would be 396 miles.

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State highway officials urge need for immediate, large rehabilitation plans

Low tax income, extension of time on federal funds, and more consideration of bridge clearances among current needs discussed

To keep the nation's $30 billion national highway plant efficient, a large-scale annual program of replacements and modernization is needed in addition to routine maintenance, according to Thos. H. MacDonald, commissioner, Public Roads Administration, in an address before the 32nd annual meeting of the American Association of State Highway Officials held in Los Angeles, Calif., Dec. 17-20.

Construction deferred has caused maintenance costs to increase to $750 million a year, according to Mr. MacDonald, who said that some 27,218 miles of the 187,557-mile federal-aid system are in a condition requiring some reconstruction.

Mr. MacDonald's talk reviewed the contribution of highways to urban, rural and industrial developments. Because of the dependence of the nation on continued good highways, he said, ". . . works of construction and maintenance . . . cannot be turned off or turned on to accord with some theoretical concept of using such works to fill the gaps if private employment lags."

Speaking of gasoline taxes, Mr. MacDonald pointed out that "the income from these taxes has been so large a factor in extending the mileage of improved roads, the conclusion is inescapable that the constantly growing market for motor fuel is a direct result of these taxes. . . . In 1946, the total of all state and federal imposts on the road user amounted to no more than ¾ c. per mile of travel. . . . This is less than the differential between operating cars over worn and rough roadways, as compared with the cost of operation over smooth roadways."

Contracts total $479,000,000

AASHO president M. J. Hoffman, commissioner of highways, Minnesota, in his presidential address reviewed association activities for the year and discussed problems concerned in the 1946 national highway program. He said that some $479,000,000 of contracts involving federal funds have been let during the first 11 months of 1946, but that this is just a start. Although this amount equals the prewar dollar level, according to Hoffman it is inadequate because (1) prewar construction lagged behind needs and (2) it represents less actual construction due to price increases.

President Hoffman commended the "middle-of-the-road" highway program followed in 1946. If construction had proceeded at too swift a pace, it might have interfered with the housing program and greater competition for highway construction forces might have caused prices to jump to even higher levels.

Of the $1 billion of federal funds appropriated for highway use in the first postwar biennium, Mr. Hoffman said, only about one-third would be actually spent because of difficulties in letting contracts. This, he said, does not indicate a decrease in need for highway expenditures, and the hope was expressed that the moneys unexpended are not permanently lost.

President Hoffman said that the shortage of engineering personnel in state highway departments is hindering many state programs. Engineering graduates can get more money in federal or private work than the states can offer for such beginners.

Safety action program

A paper by Major General Phillip B. Fleming, administrator, Federal Works Agency, read by D. C. Greer, state highway engineer, Texas, reviewed the progress of the action program adopted by the President's Highway Safety Conference last May. General Fleming expressed the opinion that the state safety committees being set up will be the most useful element of the action program. However, he predicted that, if the various state legislatures do not take action, "stringent federal legislation in the safety field is almost certain to come."

Representative J. Will Robinson, of Utah, chairman of the House roads committee, reviewed important principles of the Federal-Aid Highway Act of 1944 which, he said, could well be included in future similar legislation. These principles include: (1) The federal government deals only with the states in allocation of funds and the states in turn are responsible for dealing with cities and counties, (2) special consideration is given to city traffic and (3) states with public lands receive extra benefits.

California's problems increase

Commenting on the Collier report on California highways (*ENR* Nov. 7, 1946; vol.p. 609) G. Donald Kennedy, Automotive Safety Foundation, said California's present population of 9,000,000 includes 2,000,000 who went to that state during the war and are not now leaving but are being joined by new arrivals. In the past five years, Mr. Kennedy said, while the volume of motor traffic over the entire United States has increased an average of 5 percent, according to PRA figures, the increase in California has been 26 percent. Motor vehicle registration in California has now passed the 3,125,000 mark, more than 10 percent of the entire U. S. registration. For these and related reasons, Governor Warren rates the question of what to do about highways as California's number one problem and has called a special session of the legislature to consider a program of highway expansion.

Planning surveys

Mr. MacDonald raised a question as to whether planning surveys should not take into account forms of transportation other than by highway. England, he said, has just enacted a law which nationalizes all forms of transportation, protecting railroad income by limiting common-carrier motor trucks to hauls within a 25-mile radius, and private trucks to 40-mile hauls.

R. H. Baldock, Oregon state highway engineer, felt that competition would safely correlate rail and highway transport in this country. In England, he said, rail service is extensive and doubtless more adequate than it is here. Supplementing this view, Mr. Kennedy said that California is not well served by rail freight in the short haul and LCL classifications. Moreover, railroads move LCL freight at a loss in order to keep rates comparable to truck rates.

Mr. Greer said that in Texas selection of the secondary roads that are to receive federal aid begins with an estimate that construction costs on such roads would be about $8.000 per mile. This figure is divided into the proposed $60.000.000 fund (half state and half federal) and the resulting mileage is allocated with respect to the findings in planning surveys. Then, prior to appearing before the county commissioners courts, endeavor is made to "do a selling job" on the aims in projected improvements.

Subgrade preparation

A. T. Bleek, construction engineer, Wisconsin state highway commission, stressed the importance of extending granular lifts all the way from ditch to ditch to get rid of moisture that otherwise might not drain out after having been drawn up by capillarity. Wisconsin learned this long ago, he said, when capillarity drew up water through porous material which was left relatively dry while moisture held near the pavement froze and heaved the concrete.

F. N. Hveem, staff materials and research engineer, California highway commission, confirmed the finding of dry porous material below material with a high water content in material close to the pavement. He cited an instance in which an oil membrane put on the subgrade to exclude moisture from the material immediately under a rigid type pavement, had done just the opposite.

Borings made through pavement and membrane showed that moisture was being held between pavement and membrane while material below the membrane was relatively dry. Mr. Hveem felt that water vapor in air which fills the interstices of porous material, and which may be turned into water by condensation, is an important factor in behavior of foundations for high type pavements.

H. E. Surman, engineer of design, Illinois state highway commission, reported that with recent prices on gravel at $6.80 per cubic yard, Illinois has found an effective substitute by crushing up concrete from abandoned 6½-in. concrete paving. About three years ago some 6 miles of this was crushed to 1½-in. size, at a cost of only 14 cents per square yard, and stockpiled along the route for later use in a new subgrade. This was so successful that the same method of disposing of some 40 miles more is now planned. However, the cost of the crushing will now be 30 cents per square yard.

Traffic accident studies

Reporting on accident classifications, D. M. Baldwin, National Safety Council, reviewed tabulated data from 9,000 accidents on 4,000 miles of highway. Defining an accident as an occurrence resulting in death or injury or property damage of $25 or more, he gave figures to show that a typical three-lane pavement has an average record of 3.2 accidents per million car miles while traffic remains below 1,000 cars per day. When traffic increases to 8,000 cars per day, the accident rate can be expected to double. When traffic increases to 9,000 cars per day, congestion causes the accident rate to drop to 2.6.

Important aids to the state highway program are available in radio and the movies as a means of informing the public, said Spencer Miller Jr., commissioner, New Jersey highway commission. Some twenty million people see the movies and 30 to 35 million listen to the radio, he said, and he suggested that highway engineers should "hide not your light under a bushel". Mr. Greer reported effective use of radio time made available free of charge to broadcast safety campaigns.

Mobile radio stations

T. H. Dennis, maintenance engineer, California highway commission, reported that California's governor has appointed an advisory committee to coordinate action by the several state agencies that may ask the Federal Communications Commission for radio licenses and may need to establish repeater stations in strategic locations.

Many other agencies, such as railroads, oil companies, utilities, motor transport firms and others, Mr. Dennis said, are rapidly waking up to the advantages of using radio. For this reason unless the various states take prompt action they may be too late to find any wave-bands available. Instances were cited to show the great value of two-way radio in maintenance of a highway system. A particularly useful field is in communication with snow-plow crews. However, 23 other emergency uses were cited, ranging from floods to live wires.

Discussion of the use of radio in highway work lead to a resolution, passed later in general assembly, requesting the FCC to give state highway departments more freedom in the use of radio by removing the restriction to emergency use which now obtains.

Higher truck loads opposed

John S. Worley, professor of transportation-engineering, University of Michigan, advocated the approval of heavier truck loads by using more axles to improve distribution of the load. Discussion by three members of the committee on bridges and structures as well as from the floor voiced general opposition to any increase in truck loads because of resultant overloading of bridges and pavements.

Blue light for snow equipment

The committee on maintenance and equipment recommended that all states adopt a uniform identifying light signal for snow removal and ice treatment equipment. This signal is to be a flashing blue light with a 6-in. or larger lens. The light will be mounted on the top of the cab so it can be seen by motorists approaching from either direction. It was also recommended that all maintenance equipment be painted an orange color as a safety feature and for easy identification.

Resolutions

Resolutions passed at the close of the convention called upon Congress: (1) To enact suitable legislation to extend for an additional 12 months the period of availability of funds appropriated under the Federal-Aid Highway Act of 1944 for each of the years 1947, 1948 and 1949; (2) to further, as a peacetime project, the completion of a highway between the U. S. and the Panama Canal and to provide, from time to time, such funds as may be needed for this purpose; and (3) to recognize the need for allocating war surplus equipment to the states on the basis of a fixed percentage of the total

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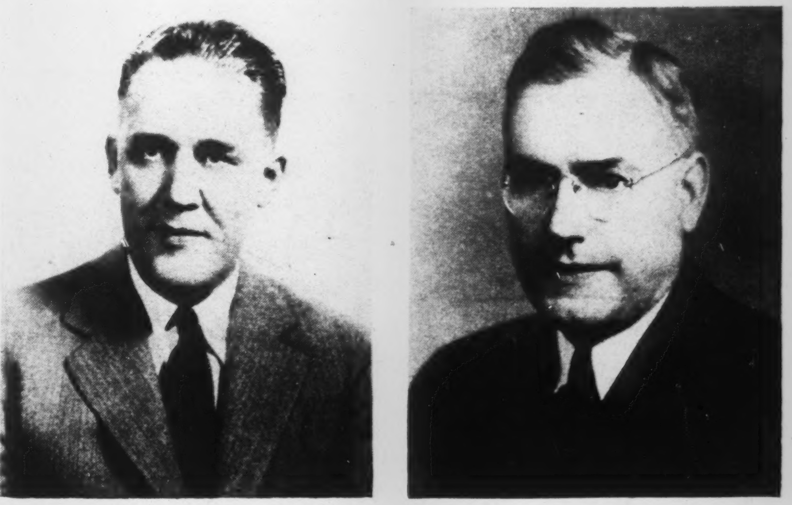

New Officers—C. W. Phillips (left), commissioner of the Department of Highways and Public Works of Tennessee, was named president for 1947; and R. H. Baldock, chief engineer of the State Highway Department of Oregon was elected vice-president of the American Association of State Highway Officials at its recent annual meeting.

Seabees pass 5 years, continue as Navy arm

Department announces organization will continue to handle emergency construction

Now considered a permanent part of the Navy, the Seabees—or more properly, the Construction Battalions—marked their fifth anniversary of service on Dec. 28.

Adm. Manning

From a proud force that numbered 250,000 at the peak of its wartime activity, the organization has now been reduced to about 7,000 officers and men, but Rear Admiral John J. Manning, Chief of the Bureau of Yards and Docks, said last week that the Seabees will continue to handle emergency construction work for the Navy, and would work with the Marine Corps to develop new amphibious techniques.

Organized shortly after the loss of Wake Island, early in the past war, the officers and men who made up the Seabees—most of them volunteers—represented skilled workers in some 60 construction trades, and were able to undertake almost any type of advanced-base construction. Often working under direct enemy attack and occasionally accompanying the spearhead of Allied attacks, the men of the battalions were trained to handle weapons of war, as well as tractors, cranes and other construction equipment needed to support the battle forces.

The organization participated in every major invasion of the war, from Japan to Normandy. Perhaps its greatest claim to fame was won as speed specialist in the construction of airfields and airstrips. In New Georgia, for instance, the Seabees built a fighter strip in previously untouched jungle terrain in less than 10 days. A much more extensive undertaking was their construction of a B-29 base at Tinian, in the Mariana Islands. In less than a year, they built 40 miles of runways.

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Six Point Housing Plan

(*Continued from page* 3)

structures as farm buildings and garages.

Also planned is increased use of insured mortgage financing to aid housing construction, especially rental dwellings. On Dec. 14, President Truman made available to the Federal Housing Administration an additional $1,000,000,000 for mortgage insurance in accordance with Title VI of the National Housing Act of 1934. As of Nov. 30, about one-third of the $1,000,000,000 supplied when Congress passed the Patman Housing Act in 1946 had been obligated. Therefore, a total of about $1,630,000,000 is now available for extension of insured mortgage financing.

A Dec. 28 report by the housing expediter states that exports of lumber suitable for housing have been declining more or less steadily since the first of the year while the import figures were rising. Exports totaled 20,000,000 b. ft. in January, rose to 23,000,000 in March then receded to 7,000,000 b. ft. in October. Imports of these products were 56,000,000 b. ft. in January, and reached the 92,000,000 b. ft. high in October.

Cement exports, which decreased considerably in September, registered another 10 percent drop in October. Wire nails exports for October had dropped to less than half the amount for August. Builders' Hardware and most heating and plumbing supplies continued well below the January-August average of exports. According to the NHA report, exports of building materials continued to amount only to a small fraction of domestic output of these commodities, ranging from 0.1 percent for radiators and convectors to 1.3 percent for lumber and 2.4 percent for wallboard other than gypsum.

But, until materials are adequately available, FHA will require approval for construction of all new homes to assure completion of dwellings of a size and type offering maximum aid to solution of the housing shortage. Those seeking to build under the present program must apply for permission on NHA form 14-56 at a local or regional FHA office.

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AASHO meeting

(*Continued from page* 7)

amount available at the present time.

Other resolutions were those which (a) called upon the CPA to immediately cancel all rules and regulations restricting free manufacture and distribution of construction equipment, (b) endorsed the "action program" adopted in May 1946 by the President's Highway Safety Conference and (c) requested the Corps of Engineers, USA, when holding public hearings on applications for highway bridge permits over inland waterways, to call for arguments showing relative benefits to be derived by vehicular as well as water-borne traffic. Vertical and horizontal clearances, it was urged, should be determined on the basis of the relative importance of the classes of traffic to be served.

New officers

C. W. Phillips, commissioner, Tennessee Department of Highways, was elected president of the association for 1947, succeeding M. J. Hoffman, of Minnesota. R. H. Baldock, of Oregon, was elected first vice-president. W. W. Polk, of Illinois, and Spencer Miller, Jr., of New Jersey, were reelected as regional vice-presidents. Newly elected regional vice-presidents were: F. Elgin Bayless, of Florida, and C. B. Shain, of Washington. G. H. Henderson was reelected treasurer. New members of the executive committee are: R. H. Leavitt, of Utah; C. H. Sells, of New York; and F. R. White, of Iowa.

***Remember When?**—The beaches were hot and damp and uncomfortable—and often under fire—but the Seabees and their construction equipment were there, hard at work, to pave the way for new forces and new attacks.*

Random Lines from an editor's notebook . . .

. . . In which are given some highlights in the career of George Wilson Malone who, as the only civil engineer in the United States Senate, ought to become a national asset.

One of the victors in the several spirited contests for seats in the U. S. Senate that enlivened the November election was George Wilson Malone, Republican, of Nevada.

Of special interest to the engineering profession is the fact that Senator Malone is a successful civil and hydraulic engineer of long experience. When he takes his seat upon the opening of the 80th Congress this week, he will be the only representative of the profession in the upper house. One civil engineer —Representative Carl Hinshaw of Pasadena, Calif.—now represents the profession as a member of the House of Representatives.

It seems particularly appropriate that at a time when plans are under way for an almost unprecedented amount of construction for water power, water supply, irrigation and flood control there should enter the Senate a man with Mr. Malone's experience and qualifications, one who has long been active in the development of important engineering projects in the West.

Senator Malone, 56, is a native of LaFontaine, Kan. He entered the University of Nevada in 1913, and proved himself to be not only a good student but a good athelete. He became captain of both the baseball and the football teams, and at that time was also the winner of the amateur middleweight boxing championship of the Pacific Coast.

Having already acted as engineer in charge of surveying for the Pyramid Land & Stock Co., making surveys for cultural maps, reports on reservoirs and reservoir sites, and range maps, he received his degree in 1917, and almost immediately became a member of King & Malone, engineers, and later did similar surveying work for the Nevada California Land & Stock Co.

When the United States got into the first World War, Malone promptly enlisted in the Army and in 1918-1919 he served as lieutenant in the Field Artillery in the A.E.F. Later he was in the regimental intelligence office of the 40th Division. After the war he was a major in the 115th Engineers, Nevada National Guard.

State engineer of Nevada

In 1927 he became state engineer of Nevada, and afterwards served on many public bodies, including the State Public Service Commission, the Colorado River Commission, State Irrigation Commission, State Planning Board, and the National Committee on Conservation and Administration of the Public Domain. While carrying on his own engineering and consulting practice, he published a report on resources and industrial uses of power in the Boulder Dam area. He was also advisor to the Secretary of the Interior for construction and sale of power, and he was consulting engineer on the Central Valley Water project, now under construction in California.

George Wilson Malone

—only civil engineer in U. S. Senate has long experience in water problems

Since 1937 Mr. Malone has been managing director of the Industrial West Foundation; and he has recently compiled and published an industrial encyclopedia on the "Western Economic Empire", including the eleven western states, Alaska, Hawaii and the Philippine Islands.

Takes positive stand

During his campaign for election Mr. Malone, basing his views on his professional background, demanded a positive program of improvements on the fundamental (for the West) issues of water power development and storage, improvement of rangelands, and other matters.

In regard to water development and storage as affecting his state, Mr. Malone said during his campaign:

"Water for irrigation of a quarter of a million acres, and an additional water supply for mining, livestock, industries, cities, and towns can be provided through upstream storage for our isolated desert ranches and livestock units. The development of an underground water supply through artesian wells and pumping units, and pumping Boulder Dam storage waters with the Basic Magnesium 50-second-foot pumping plant should be planned and executed without delay."

Urges resources development

As to power and industry, he thinks:

"We should immediately install our 82,500-k.w. generator at Boulder Dam, demand a withdrawal privilege for the same percentage of power to be generated at Davis Dam as we secured from Boulder, and make a thorough investigation of ways and means to deliver low-cost power for mining, agricultural and domestic users to the northern and central areas of our state.

"Possibilities in this line are tremendous, but plans must be made by men of vision and initiative, and pursued with vigor, if Nevada is to realize any benefits."

"It is time that we directed our best thoughts along the lines of utilizing our vast resources for the benefit of our people and raising our living standards through the creation of additional employment, business opportunities and taxable wealth to help carry the necessary tax load."

As a senator from Nevada, Mr. Malone will be in a position to aid the implementation of some of these ideas for the benefit of his local constituents. And he will also have the broader responsibility of serving the needs of the whole country. In both cases, his engineering training will stand him in good stead, and in both he can measurably add to the stature and influence of the civil engineering profession.—*T.D.M.*

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Big maintenance contract for government in Nevada

The Guy F. Atkinson Co., San Francisco, Calif., large construction firm, has been awarded a contract for protecting and maintaining $150,000,000 worth of government installations in Nevada.

Included in the property, of which the War Assets Administration is the custodian, is the Basic Magnesium plant at Henderson; an ore mine and reduction plant at Gabbs; housing projects at Henderson and Gabbs, including facilities and utilities, and a manganese ore plant near Las Vegas. The contract will run until June 30, 1947.

New York considers major proposals for easing increasing air-traffic jam

Port of New York Authority and private consultants submit programs for financing, rehabilitation and completion of major airports in metropolitan area

Metropolitan New York's muddled and delayed commercial airport expansion and financing program has again come to the fore with release of plans by the bi-state Port of New York Authority and somewhat competitive plans of a group of consultants reporting to Frederick G. Reinicke, commissioner of the Department of Marine and Aviation of the City of New York. Still another report, that of the newly created New York City Airport Authority, is expected to be submitted in January.

LaGuardia Field has and is continuing to settle seriously so that major rehabilitation is required to preserve its usefulness. Other airfields affected by the reports are Idlewild and Newark. Large sums of money are involved, and financing rather than engineering dominates, the agency reports.

Idlewild progresses slowly

To date there have been no construction difficulties at Idlewild, other than a labor jurisdictional dispute that has delayed installation of communication lines for more than a year. Newark Airport had some difficulties with surface settlement (*ENR* Aug. 8, 1946, vol. p. 149) but engineers have much less trouble in outlining remedies for this than for the financial situation.

Grandiose plans for Idlewild, prepared under direction of former Mayor F. H. LaGuardia, and jammed through in the last days of his administration, envisaged a 12-runway port with a huge circular administrative building and a three-mile long loading arcade. Together with hangars and other airline facilities, it was estimated, in 1945, to cost some $200,000,000 at 1939 prices (*ENR* Jan. 24, 1946, vol. p. 124). The incoming administration of Mayor William O'Dwyer scuttled many of the ideas, contracts and financing of the former administration to favor "more necessary" city improvements, all of which could not be included within the city's debt limit. Work on construction of the port has continued in a somewhat desultory manner and it is not now expected to be placed in service until late in 1947, at best.

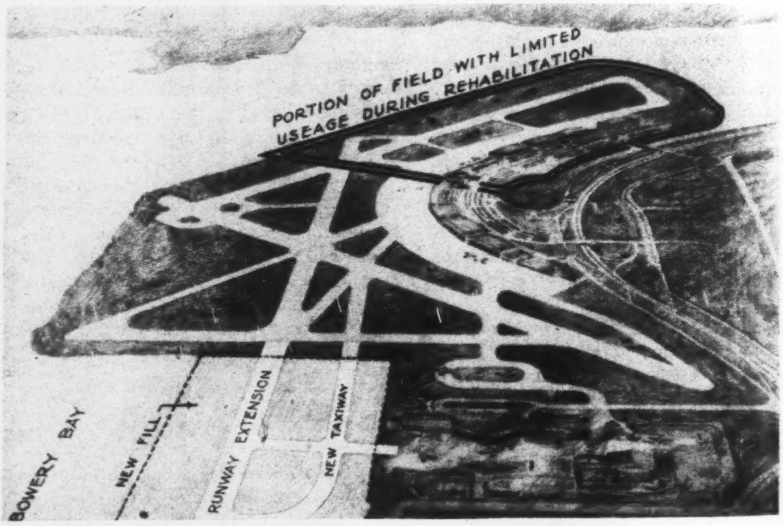
A New York City Airport Authority was set up to handle financing outside the city's statutory debt limit, but this group has not yet presented a workable plan. Late in the summer, the Port of New York Authority, a New York-New Jersey bi-state agency that built and operates the George Washington Bridge, the Holland and Lincoln tunnels and other port structures, was asked to submit a proposal to take over New York City's commercial airports. The Port Authority had submitted earlier a plan to complete and operate the Newark Airport, an offer that has not been accepted but has been renewed in connection with the recent plans for operation of New York City's airports.

The Port Authority plan for La Guardia and Idlewild asks a 99-year lease, to be financed with the authority's own $2\frac{1}{2}$ percent bonds at a cost of about $191 million. The offer contemplates rehabilitation of LaGuardia Field by extending one of the runways across Bowery Bay in front of the present seaplane base and continuing operation of the field while stabilizing and refilling the sunken eastern end of the airport. Idlewild would be completed immediately to a six-runway stage and later would have a seventh runway added for instrument approach that would not interfere with the present approach path to LaGuardia Field. It is not expected that the originally proposed 12-runway system will ever be completed.

It is expected that $212,000,000 will be required to rehabilitate and complete LaGuardia and Idlewild fields. Of this, $81,000,000 will be for general construction at Idlewild and $28,500,000 for LaGuardia. In addition, some $69,000,000 at Idlewild and $6,000,000 at LaGuardia are visualized for capital expenditures for individual airlines and will be repaid by direct lease.

In addition, the city, which already has spent, committed or has in its capital budget for 1947 some $91,000,000 for LaGuardia and Idlewild is expected to continue these expenditures and to provide all transit access outside the fields. The Port Authority plan includes the development of air terminal structures around a large central oval that will provide 30 plane loading positions for domestic airlines and 12 plane loading positions at a separated but adjacent international area. Both terminal structures would be developed intensely for revenue and service purposes with office building and airport facilities.

The Port Authority has estimated that the airport should start returning rental money by about 1953 and that shortly after 1960 should return about $2,000,000 per year, one-half of which would be turned over to the city to reimburse it for the $91,000,000 investment. Some city officials are not enthusiastic over the proposal, due to the long time over which the investment would be included within the statutory debt limit and the



For Runway Extension—*The Port of New York Authority's plan for the rehabilitation of LaGuardia Field includes filling across Bowery Bay—originally intended for use as a seaplane base but now almost unused—and extending the east-west runway. Thus, three runways would be available during the repair period while underlying silt is drained and the field relevelled.*

fact that the city might never recover the $27,540,000 estimated as interest over the term of the contract.

Lower cost plan

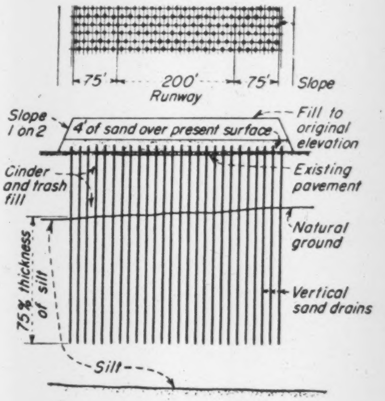
The study made by Downer, Green & Carrillo, engineers for the city on Idlewild; Harrison & Abromvitz, architects; and Clarke, Rapuano & Holleran, consulting engineers, is expected to form the basis on which the New York City Airport Authority will base its offer to the city to take over completion of Idlewild, rehabilitation of LaGuardia Field and operation of both. Construction of the central terminal area at Idlewild for the six-runway stage would be done for about $70,000,000 with the city completing the runways themselves under current appropriations. The central area would cost $49,000,000 for an administration building and terminal within a 4,500-ft. long oval that would include control tower, express and post office buildings and a ring of peripheral structures with everything from waiting rooms to equipment sheds. Some $21,000,000 would be spent for hangars and other facilities directly for the airlines. This is a figure that is almost identical with the amount required in excess of the $50,000,000 that the city airport authority feels could be raised on 2½ percent bonds. An additional $55,755,000 would be required to expand Idlewild to 12-runway operation. The plan for ultimate development of the central area calls for 86 loading stations connected by covered walkways.

Rehabilitation at La Guardia

Expediting subsidence of LaGuardia Field by use of vertical sand drains and refilling to the original runway elevation is the method for repair of the sinking field that has been recommended by Madigan-Hyland, consulting engineers for the Department of Marine and Aviation. The eastern end of the field, where 20 to 30 ft. of fill was placed over a 60-ft. stratum of gray organic silt of extremely soft consistency, is now settling at a rate of about 4 in. per year and is expected to reach natural stability at a total of 9 to 12 ft. settlement over a period of 50 years. The western part of the field is on good natural ground and has not settled.

Consolidation of this stratum of organic silt is held by the Madigan-Hyland report to be entirely responsible for the foundation and settlement difficulties, which were to some extent anticipated when the field was built (*ENR* June 2, 1938, vol. p. 779, and March 28, 1940, vol. p. 454). The administration building and arcade structure at the airport are over the organic silt area and, while on piles, have experienced considerable uneven settlement.

A major rehabilitation job is anticipated that will require closing at least a portion of LaGuardia Field for a period of a year or more. This can be deferred for a year or two until Idlewild Airport is in operation but unless this major work is done, the $60,000,000 field is expected to become unusable in less than five years as its surface sinks below high tide. Repairs costing $1,500,000, largely on structures and utilities, must be done at once to prevent serious deterioriation. Total cost of the rehabilitation recommended is $12,000,000, exclusive of desirable new hangars, extended runways or other facilities.



For Stabilization—*To drain the silt underlying LaGuardia Field in New York City, a pipe casing will be driven and a sand column established as the pipe is withdrawn. Layer of sand over the existing surface will take the moisture forced out of subsoil.*

The use of vertical drains is expected to speed subsidence so that stability of the organic silt will be reached in a period of about ten months. Drains might be placed by cutting through the existing pavement and driving open end pipe piles that would then be cleaned out and filled with sand as the pipe is withdrawn, leaving a vertical drain to permit water to rise to the surface. Here a horizontal layer of sand over the runway and shoulder width would carry the water outside. The area would be filled to the elevation required for settlement to the desired level and, after settlement ceased, repaved.

Floyd Bennett Field

As an expedient to accommodate metropolitan New York's expanding air traffic, Floyd Bennett Field has been leased from the Navy and will be used for the next two or three years until accommodations can be provided at the other airports. About $1,500,000 will be spent immediately to convert the field from a Navy establishment to commercial use.

New roof completed for Westchester Co. Center

A $150,000 repair job on the Westchester County Center at White Plains, N. Y., is expected to be completed next month to permit reopening the county-operated auditorium, closed when flaws developed in its original roof.

After long delays brought on by shortages in materials, work is progressing satisfactorily on replacement of the roof of the huge structure, according to James C. Harding, Commissioner of Public Works.

Commissioner Harding ordered the auditorium of the building closed on Dec. 27, 1945, when an inspection showed the honey-combed roof had dangerous flaws "with the possibility of injury to any audience." Workshops and a little theater in the same building have remained open but the main auditorium, seating capacity 5,000, has been closed for a year.

The original roof was lamella, or fish net type, using 3-inch by 16-inch timber beams laid in diamond shape with 2-inch wood sheathing placed over that and a roofing felt and asphalt covering over all. The old roof was removed last June.

Replacement work is being carried on by Lewis & McDowell, 285 Madison Avenue, New York City, contractors. Last October Terry Engineering Co. of New York, subcontractor for the steel work, began erecting the eight huge steel trusses that support the new roof.

The trusses are 130-ft. spans milled in Pittsburgh at the Homestead plant of Carnegie Steel and fabricated by Utica Structural Steel Corp. The spans were joined on the job. Steel purlins between the trusses will be topped by concrete roof planks three inches thick covered by roofing felt and asphalt.

A composition wall board will be used in paneling the new roof to insure proper acoustics. The paneling will provide 15,000 sq. ft. of reflective area and 12,000 sq. ft. of absorbent material down the center of the roof.

The method for acoustics was adopted on the advice of Vesper A. Schlenker, a former superintendent of research engineering at Bell Laboratories in Buffalo. The roof block being used also has sound-absorbing qualities because it contains vermiculite.

In addition to acoustical work on the roof, the building had an acoustic block on its south wall and in another section adjacent to a motion picture booth, a total area of 2,500 sq. ft., and both are being retained. The old roof had only three-fourths of the area surrounding a skylight covered by an acoustic blanket.

MEN AND JOBS

James Meredith Artley, who received his degree in civil engineering at Duke University engineering school, Durham, N.C., in 1945, is with the Artley Construction Co. of Savannah, Ga.

Robert G. Cooper, who was graduated from the University of Wisconsin school of engineering in 1941 and has since been working with the U. S. Army Corps of Engineers at Sault Ste Marie, Mich., and in Oklahoma and New Jersey, has been appointed city engineer of Rice Lake, Wis.

Robert E. Neis, administrative assistant to Commissioner Lloyd M. Johnson of the Department of Streets and Electricity, Chicago, Ill., has resigned to join Griffenhagen & Associates, management consultants, of 333 North Michigan Avenue, Chicago. A graduate in civil engineering of the University of Michigan, Mr. Neis went to the Chicago department in December, 1943, following his work on the staff of the city budget survey committee, which jointly represented civic organizations and the city administration.

W. A. Wood, highway engineer for the Taholah Indian Agency at Hoquiam, Wash., has been transferred to the district office of the U.S. Indian Service at Billings, Mont. He is succeeded at Hoquiam by **Jack C. Baker,** formerly of the Fort Belknap agency, Harlem, Mont.

Frank L. Barlow, Stonington, Conn., has been named assistant deputy comptroller of Connecticut in charge of public works. Mr. Barlow was appointed assistant deputy comptroller in 1943, serving as such until the late John M. Dowe became comptroller in 1944, when he was transferred to a position in charge of state leases. The public works position has been vacant since 1944.

Archie B. Uzzle, after three years of Army service, has returned to his former post as assistant superintendent of the Raleigh, N. C. Water Department.

Robert R. Clegg, central district sales manager of the American Lumber and Treating Co., is now president of the Chicago Chapter Producers' Council.

Officers of the National Society of Professional Engineers gather for mutual congratulations on their recent election. Left to right, they are: Paul Robbins, executive director; Russell Allen, treasurer; Ritchie Lawrie, Jr., president; Allen G. Stanford, vice-president, southern zone; J. P. Fairman, vice-president, northeastern zone, and Alex Van Praag, vice-president, central zone.

Henry J. Lenschow has resigned as engineer for the Gust K. Newberg Construction Co. of Chicago, Ill., to become city engineer of Tomah, Wis. He is a civil engineering graduate of the University of Wisconsin, and worked 12 years for the State Highway Commission of Wisconsin; 1 year for Simons, Hazelet & Erdal on the construction of the Green River Ordnance Plant at Dixon, Ill., and two years for the Chicago Milwaukee, St. Paul and Pacific Railroad Co.

Paul Boucherle has resigned as Youngstown, Ohio, city building inspector and zoning engineer, after 11 years. He will return to private work. He is now engaged in remodeling school buildings at Salem, Ohio. In Youngstown, he designed several high schools, Youngstown College, and an addition to Butler Art Institute.

Clark Hartzell has been appointed superintendent of streets, and **William Coopman** city engineer of Moline, Ill. Coopman replaces the late Robert M. Benell. For many years Hartzell had served as assistant superintendent of streets, Coopman as assistant city engineer.

Lewis B. Ackerman, recently construction engineer for the Post Falls unit of the Rathdrum Prairie project in Idaho, has been appointed resident engineer to supervise construction of the Potholes Dam on the Columbia Basin project in eastern Washington. He was connected with the Columbia Basin project from 1935 to 1941, working in responsible positions at Coulee Dam and Wenatchee, and subsequently served as resident engineer for the Mann's Creek project in Idaho and the Gooding division of the Minnidoka project in Idaho.

Walter E. Yow, city manager and secretary of the planning commission of Asheboro, N. C., for the last 15 years, has tendered his resignation, effective March 1, to enter private business.

Karl G. Andreissen, engineer with the North Carolina Highway Commission, has been placed in charge of a state highway office just opened at

Louisburg, N. C., and will supervise the construction of a new bridge across the Tar River, and other highway projects in the Louisburg area.

William B. Boucher, airport engineer for the Nebraska State Aeronautics Department at Lincoln, has resigned to accept a position with the CAA Engineering division at Kansas City, Mo. He served with the Navy during the war.

Leo G. Denis, district chief engineer of the water and power bureau, surveys and engineering branch, of the Canadian federal Department of Mines and Resources, has retired after 36 years' service.

Stoner K. McLelland, supervising engineer and coordinator of the $15,000,000 bond issue construction program of Oklahoma City, Okla., has resigned to return to the state highway department as maintenance engineer. **Joe Terry** will return to Tulsa as division engineer and **Ed O'Dell.** will be moved into the state office.

Thomas N. Berry, Cincinnati, has been named assistant director of the Federal Housing Administration for the Southern District of Ohio. He returns to the FHA after nearly four years as construction analyst with the War Production Board, and recently resigned as assistant deputy director of General Disposal, War Assets Administration.

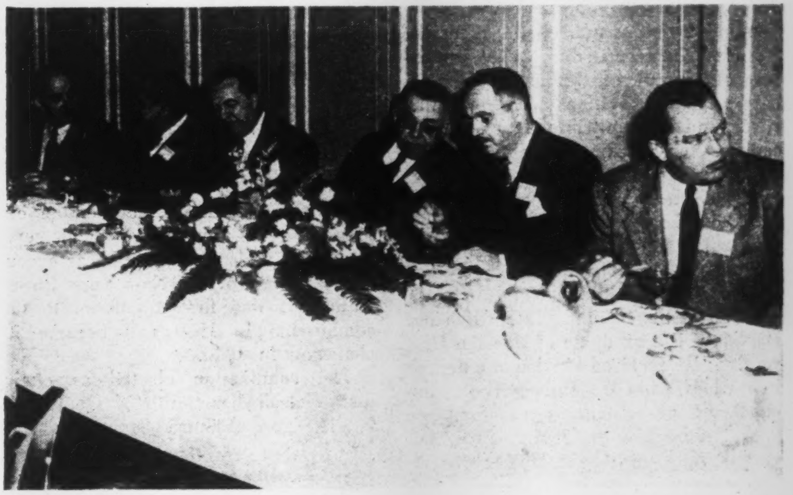
Donald C. Beam has been appointed chief engineer of the Carter Construction Co. Limited, Toronto, Ont. He is a graduate of the University of Toronto in civil engineering and was for many years on the staff of the department of buildings of Toronto, for the last three years as technical secretary to the joint committee on the revision of the Toronto building code. During the war he was on the engineering staff of Wartime Housing Limited.

Conrad Schlegel, county engineer of Ness County, Kan., has resigned to join the engineering department of Colorado Fuel & Iron Co. at Pueblo, Colo.

Thomas E. Kennedy, formerly project engineer and mechanical consultant for Walter Kidde Construction, Inc., has opened offices at 225 Lafayette St., New York 12, N. Y., as a consulting and industrial engineer.

H. H. Roberts, until recently a lieutenant colonel in the Corps of Engineers and district engineer at Fort Peck, Mont., has returned to his former civilian position as chief of the engineering division in the office of the division engineer, Brig. Gen. Lewis A. Pick at Omaha, Neb. He was succeeded in the district office at Fort Peck by **Col. Edward H. Walter.** Mr. Roberts was commissioned a captain in February, 1942, and later promoted to major and lieutenant colonel. In addition to his military service, he was employed by the Army Engineers as a civilian engineer for 22 years, of which 14 were on the Missouri River at Kansas City, Mo., two on the Ohio River and six on construction of the Wilson Dam on the Tennessee River at Muscle Shoals. He saw service in France with the Corps of Engineers in World War I.

O. H. Tucker (left) project manager for Macco Corp., and Morrison-Knudsen Co., Inc., and A. J. Wehner, construction engineer, cooperate on construction of the San Francisco municipal airport.



Left to right, E. H. Harding; John Pease, secretary-treasurer; J. C. Downs, Jr.; Dawson Winn, president, Harry H. Steidle, manager, and Austin Drewry, vice-president, fill the speakers table at a recent Washington, D. C., meeting of the Prefabricated Home Manufacturers' Institute.

Col. Clyde C. Zeigler (center), former commanding officer of the Yuma Test Branch, Yuma, Ariz., inspects graduating class at center with Col. H. M. Arnold, (right) new commander of the unit, and George W. Howard, chief of the test section.

Geological Survey assigns water resources chiefs

The U. S. Geological Survey has recently made three important appointments to administrative positions in its Water Resources Branch, which conducts broad studies of the quantity, quality and utility of both surface and ground waters.

Joseph V. B. Wells has been assigned as chief of the Surface Water Division, succeeding the late Rudolph G. Kasel. Following under-graduate and graduate work in civil engineering at Columbia University, Mr. Wells entered the Geological Survey in 1929 and has since served in New York, Pennsylvania, and Indiana, and for more than 8 years has been district engineer in Kentucky where he has developed effective cooperation with state and federal agencies. He has been responsible for the operation of several of the large slope-affected gaging stations on the Ohio River and has contributed to the procedures for assuring reliable records under these difficult conditions.

A. Nelson Sayre has been assigned as chief of the Ground Water Division, succeeding Oscar E. Meinzer, who was retired Nov. 30 after more than 40 years in the Geological Survey, and 34 years as chief of the Ground Water Division. Dr. Sayre is a graduate of Denison University. He received his doctor's degree in geology from the University of Chicago and subsequently served for three years on the geology faculty of the University of Pennsylvania. He began service with the Geological Survey in September, 1929. Dr. Sayre's principal field work has been in Texas but for several years he has been closely associated with the Washington office. During the war he was assigned to the military geology unit of the survey and directed the preparation of pre-invasion intelligence reports on water supplies covering areas held by the enemy in Africa, Europe, and the Pacific region. During that period he also made special investigations in Central America for the Office of Inter-American Affairs.

◆

J. B. Bonny to manage Morrison-Knudsen Co.

J. B. Bonny, vice-president and a member of the board of directors of Morrison-Knudsen Co., Inc., international contractors, has been named general manager, effective Jan. 1, according to H. W. Morrison, president.

The disclosure was made at the conclusion of a 2-day session of directors at the Boise, Ida., headquarters, Dec. 13 and 14. Discussed at the meeting were 1947 operations in the United States, Canada, Mexico, Brazil, China, Iran, Arabia, Alaska, Pacific Islands, and Afghanistan.

Bonny has been in charge of the southwestern district of Morrison-Knudsen, with headquarters at Los Angeles. He is expected to return to Boise about Jan. 8 to assume his new duties.

Announcing the appointment, Morrison said, "While I will in no sense lessen my interest and activity in the corporation's affairs, the continuing expansion of our operations makes necessary a broader division of executive responsibility. Mr. Bonny will assume a large share of the added responsibilities created by our expanded operations."

◆

Leland Olds resigns as federal power chief

The Federal Power Commission has announced that Leland Olds has resigned from the chairmanship, which he has had almost continuously for the last 7 years.

In accepting Mr. Olds' resignation as chairman, to become effective this week, the commission adopted an expression of its appreciation of his services. Mr. Olds, then serving as executive secretary of the New York Power Authority, was first appointed to the commission in 1939 and became its chairman in 1940.

The commission elected as chairman Nelson Lee Smith of Hopkinton, N. H., and Richard Sachse of Fall Brook, Calif., was named vice-chairman.

Mr. Smith was appointed to the commission in 1943. A graduate and former member of the faculties of Dartmouth College and the University of Michigan, he served for eight years as a member and chairman of the New Hampshire Public Service Commission. In 1939 he was president of the National Association of Railroad and Utilities Commissioners. He went to Washington in 1941 as chairman of the Board of Investigation and Research, a temporary agency established under the Transportation Act of 1940, which post he left to become a member of the Federal Power Commission.

Mr. Sachse is a civil engineer with a long experience as consulting engineer in transportation and public utility matters, including eleven years as chief engineer of the California Railroad Commission (now Public Utilities Commission of California). He was appointed a member of the Federal Power Commission in 1945, going from California where he was a member and president of the California Railroad Commission. Prior to 1941, he was director of the Department of Natural Resources of that state.

J. T. L. McNew dies; engineering educator

John Thomas Lamar McNew, 52, vice-president in charge of engineering at the Agricultural & Mechanical College of Texas and vice-president of Zone 4 of the American Society of Civil Engineers, died at Houston, Tex., Dec. 21.

A graduate of Texas A. & M. and with a civil engineering degree from Iowa State College, the major part of Mr. McNew's career had to do with engineering education, although he had military engineering experience in both world wars. At the time of his death he was chairman of the ASCE's committee on engineering education.

After having served as a second lieutenant in the Corps of Engineers in the first war, he joined the teaching staff of the civil engineering department at the Texas A. & M. He was professor of highway engineering 1925-1939 and later head of the department of civil engineering.

In World War II he was a lieutenant colonel in the Corps of Engineers on the staff of the Air Engineer, China-Burma-India Theater. Upon his return to Texas A. & M. he was named vice-president in charge of engineering.

◆

Army rejects all bids on Bull Shoals Dam

U. S. Army engineers have rejected all bids on construction of the $47,000,000 Bull Shoals Dam after a 4-month period of controversy, and will re-advertise the project shortly, it was disclosed last week.

Bids on the huge north-central Arkansas project were called early in July, and it was announced later in August (*ENR* Aug. 22, vol. p. 220) that the contract had been awarded to the White-River Constructors, of Houston, Tex., a seven-firm combine, for a low bid of $24,263,935. Col. Gerald Galloway, district engineer at Little Rock, Ark., said that the contract had never been signed, because of a series of delays occasioned by President Truman's drive for economies in federal spending near the end of last summer.

Colonel Galloway said that representatives of each of the seven firms comprising White River Constructors had expressed "strong opposition" in a recent conference to perform the work under terms of their July bid. In view of this opposition, the officer said, all bids on the project have now been rejected, and new bids will be asked.

Bull Shoals Dam will be the nation's fifth largest dam and reservoir, and will be an important step in controlling the White River.

ENGINEERING SCHOOL NEWS

Fellowships in postgraduate public health training announced by U. S. Public Health Service—Faculty changes

Applications for fellowships in postgraduate public health training for engineers and physicians for the school year beginning next fall will be received at any time prior to May 1, 1947, surgeon-general Thomas Parran said recently.

The fellowships are made possible by a grant of $228,400 from the National Foundation for Infantile Paralysis through funds contributed to its March of Dimes. Fifty-three students were awarded fellowships for the school year beginning last September.

The fellowships provide an academic year's graduate training of approximately nine months in an accredited school of public health or an acceptable school of sanitary engineering followed by three months of field training, and are open to men and women, citizens of the United States, under 45 years of age. Engineering graduates with a bachelor's or higher degree in sanitary, civil or chemical engineering are eligible; and those with other engineering degrees who have had experience in the public health or sanitary engineering field may also submit applications. The followships are administered by the Committee on Training of Public Health Personnel, which consists of representatives of schools of public health, the State and Territorial Health Officers, the American Public Health Association, as well as the U. S. Public Health Service.

The specific purpose of the fellowships is to aid in the recruitment of trained health officers, directors of special services, and engineers to help fill hundreds of vacancies existing in state and local health departments throughout the country. The fellowships are intended for newcomers to the public health field, and are not open to employees of state and local health departments, for whom federal grant-in-aid funds are already available to the states.

Applicants for fellowships may obtain further details by writing to the Surgeon General, U. S. Public Health Service, 19th and Constitution Avenue, N. W., Washington 25, D. C., Attention Public Health Training.

Prof. Leo Blumberg, a member of the faculty of the school of engineering of the University of Delaware for the last 27 years and well-known in Delaware engineering circles, has resigned to accept a post as head of the engineering department of Pennsylvania Military College. On Feb. 1, 1947, he will assume his new duties as professor of engineering, acting head of the electrical engineering department, and coordinator of the school of engineering.

The California Institute of Technology has announced the appointment of Ralph Byrne, Jr., to its engineering department as associate professor of applied mechanics. Byrne, a Caltech graduate, was a faculty member at the University of California at Los Angeles before doing war fire control research for the government. Charles DePrima, formerly of New York University, has been appointed assistant professor of applied mechanics.

◆

New color sound film on arc-welded structures

"Design For Arc Welded Structures" is a new motion picture produced to assist engineers, architects, contractors and others in the structural field to visualize the improvements in design and construction which are made possible by using arc welding. Directed by The Lincoln Electric Co., this color sound movie is another in the series of educational motion pictures which that company has recently completed for distribution.

The film shows how arc welding permits simplified design, freedom in planning, reduces steel tonnage and also simplified detailing, fabrication and erection. The picture also explains the possibilities of tubular construction and rigid frame design for more efficient use of materials and better appearance of structures.

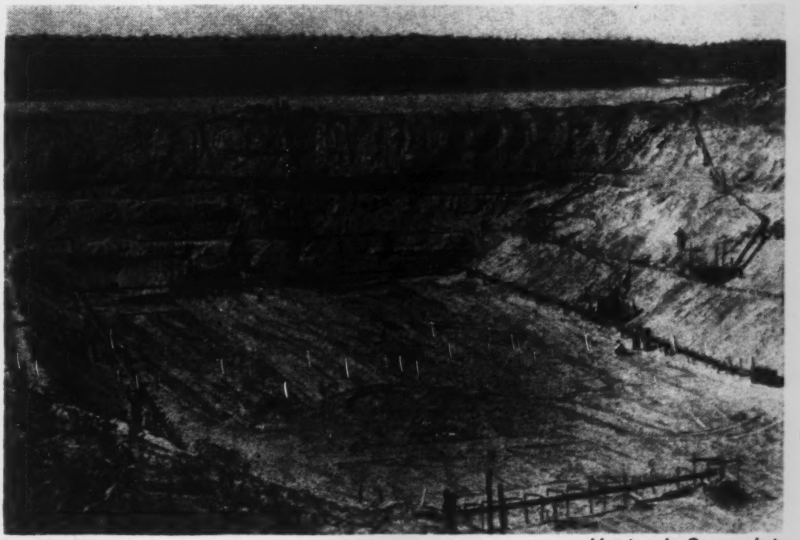
The film is available in 16 mm. sound color prints from The Lincoln Electric Co., 12.818 Coit Road, Cleveland 1, Ohio, at no charge except for transportation.

◆

Lake Michigan park is being developed

The State Division of Parks and Memorials, Springfield, Ill., filed condemnation proceedings Nov. 26 for another 230 acres of land intended for inclusion in the proposed new Illinois Beach State Park to be constructed along Lake Michigan between Waukegan and Zion, Ill.

To date, 1,000 acres have been acquired for the new park, which is proposed to join at the Illinois-Wisconsin state line with a similar area of the Wisconsin state park system.



Moretrench Corp. photo

River Stays Away—*A narrow berm and wellpoints keeps a normal head of 33 ft. on the Mississippi River out of the excavation for a stilling basin on the Cache River Diversion at Mound City, Ill. During a recent flood stage on the river, the hole was kept dry at head of 44 ft. Work is being done by R. B. Potashnick, Cape Girardeau, Mo., for the Louisville Dist., Corps of Engineers.*

California to push great road program

California's Gov. Earl Warren, evidently spurred by a proposed $2,434,730,000 highway program recommended by a special state legislative committee, (*ENR* Nov. 7, 1946, v.p. 609) has called a special session of the legislature for shortly after the beginning of the regular session Jan. 6.

Through Warren's action, legislation to throw the state's highway program into immediate action can be passed and placed on the statute books during January. Preparation of bills is already under way and copies will be distributed throughout the state before the special session convenes later this month.

Higher gas taxes

Warren advocated higher gasoline taxes, with extra fees for buses and trucks based on weight and mileage. He declined to make a specific recommendation on rates to be fixed, saying he would leave that up to the legislative body.

Not so reticent on rates was Sen. Randolph Collier, chairman of the joint fact-finding committee on highways, streets and bridges on whose report the two billion dollar program is based. Collier said he will introduce a bill doubling the present 3-cents-a-gallon gasoline tax. He said present revenue for road purposes would fall short of paying for the recommended construction by $957,071,000.

Need immediate action

In stressing the need for immediate action in launching the highway construction program, Governor Warren pointed to 4,000 deaths in the state due to traffic accidents in 1946. He termed 2- and 3-lane highways "death traps," and called for divided highways to meet the problem. He admitted that the Collier commission's report probably would meet opposition during the special session, but he commended it as an honest effort based on facts.

The report's suggestion for handling state highway funds recently ran afoul of county officials when several supervisors expressed dissatisfaction with the tight state control that would be set up under terms of the survey.

The joint highway commission recommends start of the major plan July 1, 1949, but if added revenue is voted by the special session some parts of it can be initiated before that time.

Charles H. Purcell, state director of public works, in November announced that the 1947 highway budget would total $44,497,000.

Pennsylvania prepares $137 million road work

The Pennsylvania Department of Highways is prepared to place a $137,000,000 construction program under way in 1947, Ray F. Smock, secretary, said last week.

"This large program will provide only a small portion of the improvements urgently needed," Mr. Smock said. "It cannot be completed in its entirety during 1947, but should be started at the earliest possible date and carried forward with the highest rate of progress."

The available funds may be used for the following purposes:

Carried over from the 1946 construction season, $30,000,000; deferred federal-aid, including 1946, $26,000,000; 1947 federal-aid program, $50,000,000; resurfacing, $10,000,000; State funds for major improvements, $5,000,000; improvement of earth roads, $8,000,000; bridge construction, $3,000,000; property damages, $5,000,000.

The official added that the department already has on hand sufficient plans ready for advertising to get the program under way without any undue delay in calling for bids.

"We cannot accede to the request of the Federal Works Administration that state highway construction be postponed until more favorable conditions exist in the industry," he commented. "Our program, long overdue, is most urgent and vital to the economic and social life of our state.

"We trust that economic conditions will improve so that quantities of labor, materials and equipment will be sufficient for the purposes intended and that prices will stabilize to the point where contractors may bid at a reasonable figure which will include a fair profit."

◆

E. W. Sinclair to direct Idaho public works

C. A. Robins, the new governor of Idaho has announced appointment of E. W. Sinclair, to the post of commissioner of public works, and James O. Reid, Lewiston highway district engineer, state director of highways. They succeed T. Matt Hally, who has held both posts.

For Sinclair, the job will not be new as he held it for seven months of 1939. With Reid, Sinclair will head the Idaho agency employing the largest number of workers of any state department, some 1,400 full and part-time employees.

Reid has held his present post for four years.

S. C. budgets $15 million for 1947 road projects

The South Carolina State Highway Commission has adopted a 1947 budget of $15,850,991 and 122 miles of road has been redesignated.

The budget was based on paying off $9,079,009 in bonds from the $17,130,000 in estimated gasoline tax, license and other receipts and $7,800,000 in cash on hand.

A total of 34 miles of secondary roads in Charleston, Marion, Spartanburg, Sumter and Union counties was brought up to the primary system and 88 miles of primary roads in Abbeyville, Anderson, Allendale, Bamberg, Edgefield, Greenville, Laurens, Lee, Hampton, Orangeburg, Spartanburg and Sumter counties were dropped into the secondary system.

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Underground parking concerns traffic experts

The idea of underground parking continues to intrigue those interested in relieving traffic congestion in cities.

One of the latest suggestions along this line has been made for Cincinnati, Ohio, by J. W. Brown of that city. He is asking the city council to consider a plan to build an elevated 14-lane "distributor" highway extending out from Third Street between Elm Street and Broadway and to use the area beneath for a 1,200-car parking garage.

The garage, Brown said, would be 2,800 ft. long and 200 ft. wide and have 12 or 14 entranceways along its six-block length.

The estimated cost of this proposal, introduced by Councilman Rollin Everett, is about $3,500,000, exclusive of land for which approximately $3,000,000 already is available. Proponents estimate the garage would bring in revenue of $100,000 a year, sufficient to retire construction bonds.

Vancouver, B. C. also has plan

Plans are now under way for the development of an underground garage in Vancouver, B. C. A special committee of the city council is studying the proposal. Architects have developed preliminary plans.

The project would be in Seymour Street, between the Ambassador Hotel and the Strand Theatre, and would provide parking accommodation for 300 cars on four levels, two underground and two above, in a 125 by 175-ft. area. A fireproof reinforced concrete construction building has been specified for the city's proposed four-story development.

State highway officials criticize allocations

A resolution criticizing allocation of funds by state legislatures to specific projects rather than to a general highway fund was passed by the Western Association of State Highway Officials at a meeting held in Los Angeles on Dec. 16. This action was prompted by a report that the legislature of the state of Washington in the biennial session to be held in January is planning to revert to its prewar practice of allocating funds in such a manner.

Representatives of the eleven other western states said that, if such a policy is adopted, the Washington state highway system would be the only one in the West thus subject to the vagaries of politics.

The meeting was held on the day before the annual meeting of the American Association of State Highway Officials. (See full report on page 6 of this issue.) Missoula, Mont., was selected by the group for its 1947 annual meeting on Aug. 8.

A report was heard from the committee on uniform highway financing which indicated that the association will recommend adoption by each state of a uniform 6c. a gallon gas tax and a uniform truck-use tax.

◆

F. G. Healy returns to N. M. highway post

Former New Mexico Highway Engineer Fred G. Healy, who resigned as chief engineer Oct. 11, (*ENR* Nov. 14, '46 vol. p. 628) has returned to the department of highways as construction engineer, one notch lower than his previous position.

Healy resigned when the state highway commission, at that time headed by Floyd Kennedy, said that he had failed to cooperate in the road building program. Subsequently Kennedy and Highway Commissioner Walter Berger resigned when they disagreed with Gov. John J. Dempsey over the cancellation of highway machinery and equipment orders.

Cancellation of the orders was not mentioned when Healy resigned, but it was disclosed at the time of the Kennedy-Berger walkout that Healy's action in cancelling orders, which brought the charge of failure to cooperate, had followed a curtailment order from Governor Dempsey.

The position of chief engineer is now filled by Burton Dwyre, who held the post under the preceding state administration.

M. D. Shaffer appointed Ohio highway director

Ohio's Governor-elect Thomas J. Herbert has announced the appointment of Murray D. Shaffer, of Mansfield, Ohio, as that state's highway director, effective Jan. 13 when Herbert and his cabinet take office.

Shaffer is a former chief engineer of the bureau of location and design for the State Highway Department, having served in that capacity from 1940 to 1945.

A graduate in civil engineering at Ohio University, Athens, Ohio, Shaffer started his career as a deputy county engineer in Ashland County, later setting up in business as a consulting engineer, specializing in municipal and sanitary engineering. Since 1945 he has been engineering director of Macadam Pavements, Inc., a technical and research organization with offices in Columbus.

◆

Two new toll bridges recommended in Indiana

The Indiana Toll Bridge Commission has recommended to Governor Ralph F. Gates and a special legislative committee the construction of two four-lane toll bridges—one over the Ohio River in the Aurora-Lawrenceburg area, and one over the Wabash River at Mount Vernon.

The proposed Ohio River bridge would cost $3,080,000 and have a 1,700-ft. main span, linking Indiana Route 50 with Kentucky Route 20, and provide a direct, all-weather route into Cincinnati, Ohio.

The Wabash River bridge, estimated to cost $2,784,000, would have a 1,000 ft. main span, and give access into and out of Indiana and Illinois for numerous small towns.

Tolls would be charged for an estimated 15 to 18 years, or until the construction cost are paid, after which the structures would be free. The toll committee has asked the governor and the policy committee for legislation for the setting up of a revolving fund for use of the commission to build bridges, with bridge bonds being issued after four years. The sum of $5,863,000 will be asked for the revolving fund, saving the state an estimated $1,600,000 over the old bond system, if used.

Preliminary surveys also are under way for bridges at Mauckport and Cannelton.

◆

Traffic improvements planned in Honolulu

Honolulu, Hawaii, has launched a six-months experiment with one-way traffic on its two principal through-town streets, King and Hotel.

Honolulu is also considering some kind of off-street parking plan to relieve its severe downtown congestion. Suggestions being debated include a system of six scattered, city-operated garages and underground garages.

Wide World photo

***Jap Housing—But Not for Japs**—At present hemmed in by a maze of scaffolding, the Mantetsu Project will accommodate 76 American families when remodelling is completed. The Tokyo building is former headquarters of the Southern Manchurian Railway Co.*

Factory roof replaced without exposing interior

The problem of removing a 57-year-old arched corrugated metal roof and replacing it with a butterfly-type, steel and wood covering, all without interrupting glass-making activities and storage in the interior was solved recently at the Mt. Vernon, Ohio, plant of the Pittsburgh Plate Glass Co.

The building on which the operation was conducted was built originally for the Chicago World's Fair of 1893, and later moved to the Ohio site to house steel-manufacturing processes. Later converted to glass making, it was 400 ft. long, covered by an 80-ft. wide arched roof. It has for many years housed annealing furnaces, cutting equipment and a clay room, and provided storage space.

Noting serious deterioration of the arched metal roof, company engineers determined to remove the covering and replace it, but were forced to consider means of doing so without interfering with operations in the building or with storage necessities.

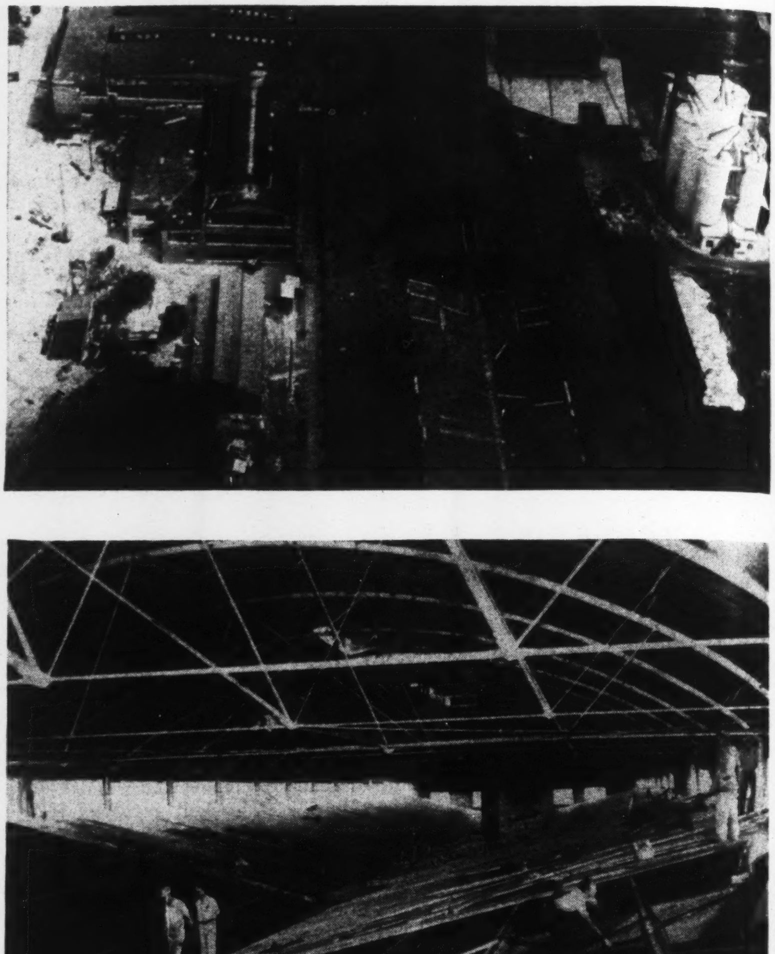
A new line of columns was installed in the center to support the new roof. The 24-in., 80-lb. rafters were first sorted in a steel yard outside the building, and brought into the structure by means of an existing track. The steel was lifted and handled by high lines, lifting and carrying being done by two air tuggers and snatch blocks.

As ironworkers completed each bay of the new roof, they were followed closely by carpenters who put down the decking, and a 55-lb. felt base sheet was mopped on. As soon as the new roof was watertight, work started on dismantling the old covering. The corrugated sheeting was first removed, then two gin poles were set to hold the top chord of the bowstring trusses at the quarter-points while the purlins were cut off and the center section of the trusses cut and lowered to the new roof.

Since the trusses were pin-connected to the column heads, it was an easy matter to lower the remaining end pieces and burn them free from the columns. No effort was made to salvage the old structure, so that the steel could be cut into convenient sections for handling.

The problem of painting the underside of the new roof and supporting steel was solved by making special scaffolding to hang and roll on the rafter beams. No floor space was available for the erection of towers. Regular monorail trolleys were used, and widened out to run on the bottom flange of the 24-in. beams.

The entire work was performed under a general contract awarded to the Rust Engineering Co., of Pittsburgh.



***Roof On, Roof Off**—A new roof replaced an old one on this glass-manufacturing building, while work went on below. At top, an air view shows new roof installed with old arched covering half-removed. Center, roofers work under old roof, and bottom, bowstring trusses that supported old arch are prepared for removal.*

Senate leader promises close scrutiny of multi-purpose federal projects

Economy and national value to be criteria for many-million-dollar water developments, Senator Taft tells Southern business men

Multi-purpose projects which have heretofore had relatively "easy sailing" in obtaining government approval and huge appropriations will receive closer scrutiny in the next Congress, Senator Robert A. Taft said in an interview following his speech before a joint luncheon meeting of civic clubs in Atlanta, Ga., recently.

Proposed public power authorities and possibly several of the government projects now in early stages of construction will be reviewed as to their economy and national worth, the Republican leader added.

Senator Taft said that the standards of the U. S. Engineers probably will be raised in future recommendations for the government to undertake multi-million-dollar projects, which in most instances have used flood control and navigation as the basis for development of hydro-electric power.

"Needed work in the field of flood control and rivers and harbors work will receive support from the Republican Congress," Senator Taft said. "However, all governmental expenditures will receive careful congressional attention as efforts are made to reduce the size of the Federal budget. Projects of a nature to take up the slack in unemployment will be deferred as long as business activity is at a high level. The trend in the next Congress is likely to follow the economy order of President Truman which was designed to eliminate government bidding for building supplies which were being sought by private industry."

The senator gave assurance to his Southern audience of business and professional men that the Republicans have an interest in the wellbeing and economic advancement of the South, as they have in other sections of the country. He expressed the belief that with the repeal of wartime controls the South's industrialization program will move forward with greater velocity. Another factor which will aid the South, the Senator said, would be the proposed legislation he will sponsor to give greater health, educational and public housing for low income groups. He indicated that this social legislation would give the states freedom from federal bureaucratic control and domination.

Discussing flood control and power development in an interview, Senator Taft said that he was not familiar with all the details of the Clark's Hill multi-purpose project to be constructed on the Savannah River near Augusta, Ga. However, he said that if the Savannah River Electric Co. would incorporate all the flood control, navigation and other features designed by the U. S. Engineers the Congress likely would consider its proposal to build the project.

The petition of the utility is still before the Federal Power Commission for decision. Meanwhile the U. S. Engineers are sparing no speed and effort to get the project under construction to block the move of the Georgia utility to take over the project.

Big building program for mental hospitals

Pennsylvania has launched a multi-million dollar building program to alleviate overcrowding at the commonwealth's mental hospitals.

Acting with the lifting of federal restrictions on non-residential construction, the state authorized calling of bids for the immediate construction of a new building to house 500 patients at the Philadelphia State Hospital at Byberry, where conditions have caused criticism.

Outgoing Governor Martin, Governor-Elect James H. Duff and Miss S. M. R. O'Hara, Secretary of Welfare, joined in announcing the decision. Rehabilitation of existing buildings also was ordered. The governor further explained that funds for the work will come from appropriations made by the 1945 legislature.

Byberry Hospital, taken over by the commonwealth in 1933, has been 75 percent overcrowded for some time, with more than 6,000 patients housed in existing buildings.

The Department of Property and Supplies, which handles construction for the state, reported a new dietary building costing $800,000 is about completed, while renovation work on present buildings—an item of $500,000—is well under way.

In addition, steam and electric systems on the male side and a kitchen for the institution cottages are being built while the department is preparing to call for bids on a new sewerage system.

The Hospital Board of Trustees recently recommended a $24,000,000 building program at the hospital.

First unit bids received for Hyperion plant

Three bids on the contract to build the first major unit in the proposed activated sludge sewage treatment at Hyperion, Calif.. were opened in Los Angeles on Dec. 11. They ranged from $1.376.804 to $1.745.359, with the Guy F. Atkinson Co. the lowest bidder. The bids were referred to the engineering bureau for checking and analysis.

The unit, to be known as the headworks building, is to be of reinforced concrete. The building will be 320 ft. long and 40 ft. high in the center of three sections, which will house chlorination equipment, screens and other apparatus for the first stages of sewage treatment. About nine months will be required to complete the structure, the cost of which will be borne by Los Angeles city sewage bonds and state of California funds.

Winter halts all work on Cascade Dam

Cold weather, snow and ice have brought to a halt for at least four months all construction activity on the Cascade Dam on the Payette River of southern Idaho. A skeleton force of miscellaneous workers for Morrison-Knudsen Co., Inc., contractors, and for the Bureau of Reclamation remains.

Before winter set in, work on the $5,000,000 structure had reached 48 percent of completion, according to Bureau and company engineers.

Included in the contract held by M-K was the relocation of 14.5 mi. of Union Pacific branch line railroad track. This was completed, except for the erection of a bridge where the railroad crosses the river near the dam. Completion awaits the arrival of girder sections.

On the dam, which will be 90-ft.-high and of earth and rock fill type, the force of M-K employees made big strides. They exposed bedrock, completed a large share of material stockpiling and grouting to seal broken rock formations below the surface.

Broken rock formation in the cutoff wall trench required huge quantities of grout in some places.

Workmen have also bored the diversion tunnel, 12 ft. in diameter and 302 ft. long, through granite, and lined it with concrete.

When completed, Cascade Dam will store 700,000 acre-ft. of water. It will require the placement of 360,000 cu.yd. of material.

Cascade is the seventh dam in a chain of developments on the Boise River and tributaries.

Local contractors' bids low on Phoenix pipe line

"Surprisingly" low bids submitted by two Phoenix, Ariz., contractors on water pipe lines that will form a part of the city's proposed $6,000,000 water expansion program will preclude any court test of a state law giving preference to local men, city officials said.

On the basis of unchecked figures, the Arizona Sand and Rock Co. was low bidder at $745,000 for constructing a 6-mi. 48-in. feeder line and $121,850 for appurtenant structures and a one-mile 42-in. line. Engineer's estimate for the two jobs was $950,000. The Fisher Contracting Co. submitted a low bid of $403,000 for construction of a three-mile, 30-in. line, as compared with an engineer's estimate of $400,000.

City officials had expected that the bids would provide the first real test of the law, which has been on the statute books for some time but has never been tested since most major contracts in recent years have been handled by the federal goverment. Under the statute's provisions, if an Arizona contractor bids within five percent of the offer of an out-of-state contractor, he must be awarded the contract.

Long irrigation tunnel begun near Coulee City

Driving of the Pacific Northwest's largest irrigation tunnel—the 10,000-ft. Bacon Tunnel of the Columbia Basin Project—has started south of Coulee City, Grant County, the Bureau of Reclamation reports.

Designed to carry water for 500,000 acres of dry land in the Big Bend region of Eastern Washington, the horseshoe-shaped tunnel will pierce a barrier of tough basalt more than 150 ft. in height. Resident Engineer E. J. Niemen said the rough diameter of the tunnel will be 27 ft. and its finished diameter, when lined with concrete, 23 ft. A companion tunnel, also capable of serving 500,000 acres, ultimately will be driven to serve the project.

Employees of the T. E. Connolly Co. of San Francisco, which holds the $3,394,000 contract for the first Bacon Tunnel and the Bacon Siphon, are making initial cuts from the South Portal. In a few days, other crews will begin pushing southward from the North Portal, about two miles away.

Fred Brunstoll, company foreman who has headed other tunneling jobs in the Pacific Northwest, said the company will drive a 12-by-14 ft. pioneer bore the full length for the upper half of the tunnel and then will follow with a second cut to take out the lower bench.

Working a 3-shift schedule, the company has 55 men at its South Portal camp, but expects to emply 175 at peak. A 200-man camp soon will be established near the North Portal, where work of driving the pioneer bore will progress simultaneously. A concrete-mixing plant for lining the tunnel also will be built near the North Portal, and the pioneer bore will be used to convey material to the southerly end.

Niemen explained that the first 500 ft. of the pioneer bore from the South Portal will be entirely in sandstone, but that this formation will taper off as the tunnel progresses and will disappear at the 2,800-ft. mark. The remainder is expected to be in solid basalt.

Equipment at the South Portal includes electric locomotives, side-dump cars, muckers with conveyors, and a five-drill jumbo. A compressor house, machine shop, battery-charging station, and other service facilities have been established near the portal.

Large irrigation dam proposed in West Texas

The Texas State Board of Water Engineers has approved plans for a large irrigation dam to be built on the Upper Colorado River in Coke County, West Texas.

The plans were presented by the Upper Colorado River Authority, which is seeking federal funds to build the dam. The project has been approved by the Reclamation Bureau, but not yet appropriated for.

The Coke County Dam would be 14,300 ft. long and 138 ft. high, impounding 670,000 ac. ft. of water. It would inundate the present site of Robert Lee, the county seat. The water would be used for irrigating 58,000 acres in four counties.

Los Angeles purchases ten water systems

The purchase of 10 privately-owned water systems serving Los Angeles, Calif., either by negotiation or by condemnation, has been authorized by the Los Angeles Water and Power Commissions.

The companies, mainly in the southwest section of the city, have a fixed capital of about $4,300,000, an estimated annual revenue of $600,000 and serve about 110,000 persons, the board reported. The largest of the companies are the Southern California Water Co., the Conservative Water Co. and the Investment Water Corp.

Urge 60-mile Allegheny River barge canal work

District and Division Army engineers have recommended to the Board of Engineers for Rivers and Harbors that detailed studies be made for construction of a barge canal in the Allegheny River from East Brady to Oil City, Pa.

The river is already canalized from East Brady to Pittsburgh, and the new work, if undertaken, would provide additional water transport routes for the heavily industrialized Allegheny River valley.

The distance between the two towns is 63 miles, engineers said, and nine locks will be required for the new waterway link.

Fresno veterans' hospital to be air-conditioned

The Veterans Administration and the Corps of Engineers have approved preliminary plans and specifications for a 250-bed general medical and surgical hospital for veterans to be built at Fresno, Calif.

The structure will be the only completely air-conditioned hospital in the $600,000,000 construction program which the Corps of Engineers is handling for the Veterans Administration. The hospital will be located on a 21-acre site north of the city. Its structural steel frame will be covered with a concrete shell, and the building will be designed with earthquake-resistant provisions.

Architect-engineers are Masten and Hurd, Huber and Knapik, of San Francisco.

Winchester, Va., approves sewage treatment plant

By an overwhelming vote citizens of Winchester, Va., Dec. 10 voted in favor of a $650,000 bond issue to finance construction of a new municipal sewage treatment plant. Plans have been completed by Alexander Potter Associates, New York consultants, and construction can be started as soon as prices appear reasonable, according to City Manager S. L. Grant. The new facilities will replace a plant constructed in 1909.

Mr. Grant also reports that plans, financing and land are available for construction of a new 3,000,000-gal. water supply reservoir and an incinerator for the city of Winchester. A new jail will also be built and the old city hall will be reconstructed or a new one built.

OBITUARY

Lieut. Col. Walter Wilson Crosby, 74, an Army officer in the first World War, retired civil engineer and superintendent in 1922-24 of the Grand Canyon National Park, died at Coronado, Calif., Dec. 20. His engineering career included services in Maine, Maryland, Massachusetts and Pennsylvania. He was resident engineer for the Massachusetts Highway commission from 1894 to 1901 and was general superintendent for the Board of Park Commissioners, Baltimore, Md. in 1904-5, and with the Maryland Roads commission from 1908 to 1912. He was lieutenant colonel with the 104th Engineers, 29th Division, A.E.F. from 1917 to 1919.

Walter F. Gallas, 63, formerly commissioner of public works, Cicero, Ill., recently chief payroll clerk, Cook County Highway Department, Chicago, and formerly a member of the Illinois state legislature, died Dec. 20.

Ferdinand Krieger, 93, who had been with the Milwaukee, Wis., water works department for 53 years and at the time of his retirement was chief engineer, died Dec. 12.

J. Albert Holmes, 76, civil engineer, died at Somerville, Mass., Dec. 18. A native of Holyoke, Mass., and a graduate of Norwich University, 1895, Mr. Holmes had served in the city engineering department of Boston, Somerville, and Cambridge, and as general superintendent of parks of Cambridge. He had charge of the laying out of the Charles River Drive there.

Fred L. Clark, 61, city engineer of Nashua, N. H., died Dec. 18 in that city. He had been city engineer since 1924 and entered the department in 1906.

John B. Halpin, 74, Elyria, Ohio, building contractor, who had built many of that city's larger apartments and commercial buildings, died Dec. 14.

Charles H. Degenhardt, 65, died Dec. at Alton, Ill. Before his retirement in 1925, he was well known in the public improvement contracting field in the Alton-Wood River area. Two big projects completed by him were the concrete paving of Belle St. north of Third, Alton, and the state highway, which first connected Alton and Hartford. The latter was achieved under wartime difficulties and made more accessible the war plants in the Wood River area.

Edgar Spears, 86, died Dec. 8, at Medford, Mass. Born at Yarmouth, N. S., he had been a structural engineer for over a half century when he retired several years ago.

John E. Godwin, 63, died at Bedford, N. S., Dec. 7. For many years he was manager and engineer for the Standard Paving Co., Halifax. Previously, he was with the Canadian Pacific Railway at Winnipeg, Man., and Imperial Oil Company, at Halifax.

Frank T. Heard, 77, civil engineer, who was superintendent of construction of the Long Island R.R. tunnel from the Pennsylvania R. R. station in New York City under the East River to the Borough of Queens, died Dec. 23. He was a major in the first World War.

Louis Herman Simon, 71, consulting engineer of Seattle, Wash., died there Dec. 19. Born in Wisconsin, he attended the engineering school of the University of Washington and later worked for many maritime and shipbuilding concerns on the Pacific Coast. He was superintendent of the Moran Shipbuilding Co. in Seattle during the first World War and also a consulting engineer for the Navy. In 1922 he founded the Simon Engineering Co. Throughout the last war he designed and helped build much of the dredging machinery the Navy used in the Pacific theater.

S. A. Baulne, 69, civil engineer, vice-president of Dufresene Engineering Co., Ltd., Montreal, Que. died Dec. 22. He was on the faculty of the engineering school, Montreal University.

MAJOR MEETINGS

American Society of Civil Engineers, annual meeting, Commodore Hotel, New York, N. Y., Jan. 15-18.

Associated General Contractors, annual convention, Stevens Hotel, Chicago, Ill., Jan. 27-30.

National Crushed Stone Association, annual meeting, Edgewater Beach Hotel, Chicago, Ill., Jan. 27-29.

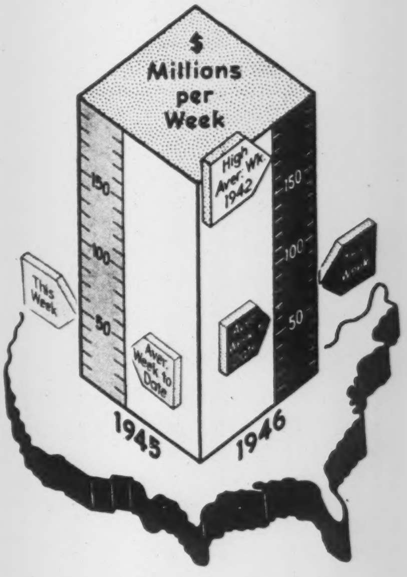
Associated Equipment Distributors, 28th annual meeting, Edgewater Beach Hotel, Chicago, Ill., Feb. 13-15, 1947.

American Concrete Pipe Association, annual national convention, Statler Hotel, St. Louis, Mo., Feb. 23-25.

American Concrete Institute, 43rd annual convention, Cincinnati, Ohio, Feb. 24-26.

American Society for Testing Materials, Committee Week, Benjamin Franklin Hotel, Philadelphia, Pa., Feb. 24-28.

CONSTRUCTION ACTIVITY



As Reported this week to . . .
Engineering News-Record

CONTRACT VOLUME

Continental U. S. Only
(Thousands of Dollars)

	Week of Jan. 2 1947	Cumulative 1947 (1 wk.)	Cumulative 1946 (1 wk.)
Federal	$5,584	$5,584	$2,179
State & Mun...	24,124	24,124	14,474
Total Public ..	$29,708	$29,708	$16,653
Total Private	32,200	32,200	26,642
U. S. Total...	**$61,908**	**$61,908**	**$43,295**

WHERE CONSTRUCTION ACTIVITY ORIGINATED THIS WEEK

Dollar Volume (Thousands)

Type of Work	This Week	Cumulative 1947 (1 wk.)	Cumulative 1946 (1 wk.)
Waterworks	$8,690	$8,690	$215
Sewerage	2,564	2,564	314
Bridges	1,018	1,018	3,060
Highways	6,249	6,249	4,334
Earthwork, Waterways	888	888	1,507
Buildings, Public..	5,634	5,634	6,519
Industrial	6,842	6,842	7,543
Commercial	22,632	22,632	18,144
Unclassified	7,391	7 391	1,659

NOTE: Minimum size projects included are: Waterworks and waterway projects, $22,500; other public works, $40,000; industrial buildings, $55,000; other buildings, 205,000.

NEW PRODUCTIVE CAPITAL

	Cumulative 1947 (1 wk.)	Cumulative 1946 (1 wk.)
NON-FEDERAL	Current	$32,099
Corporate Securities	figures	28,440
State and Municipal	not	3,659
FEDERAL	Available	158,320
Total Capital		**$190,419**

ENR INDEX NUMBERS

Index Base=100		**1913**	**1926**
Construction Cost..	Dec. '46	368.10	176.95
Building Cost......	Dec. '46	278.49	150.54
Volume	Nov. '46	164	72

CONSTRUCTION REPORTS

Bids Asked — Low Bidders — Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *J. V. McEWEN, M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

Bids Asked January 10

Wash., Buckley — State Dpt. Finance, water supply sys. with 20,000 ft. 8- to 12-in. steel and cement asbestos-pipe at Western State Custodial School. $250,000. Plans deposit $10. A T Kane, 304 Lowman Bldg., Seattle, engr.

Bids Asked January 14

Calif., San Rafael — Marion Municipal Water Dist., 874 4 St., installing 12,200 lin. ft. 12 in. steel pipeline in Fairfax, San Anselmo and San Rafael. Over $22,500. Plans deposit $25 refundable. J. S. Peters, 874 4th St., San Rafael, ch. engr.

LOW BIDDERS

Ariz., Williams—Town, Dec. 18, WW imprvs., incl. 28,000 lin. ft. 10-in. cement asbestos pipe, etc., Contr. 1, from N. P. Van Valkenburg, 8609 San Vicente Blvd., South Gate, Calif. **$163,322;** water treatment plant addn., Contr. 2, from Hoagland Findlay Eng. Co., 3254 Cherry Ave., Long Beach, Calif., **$79,528.** CD 10/31/45—ENR 11/29/45.

N. Y., New York—Comn. Water Supply, Gas & Electricity, Municipal Bldg., Zone 7, Dec. 20, Rockaway Park Iron Removal and Pump. Plant, Queens Boro, iron removal filters, from Buhl Contr. Co., 230 5 St.; pumps and wells, from Charles Michaels, Inc., 116 Nassau St., Brooklyn. **$148,200.** Received no bids Dec. 20 for plumbing. CD 1129—ENR 12/5.

Pa., Selinsgrove — Pa. Dpt. Property & Supplies, Capitol Bldg., Harrisburg, received no bids Dec. 18, erecting boilers and equip. and constructing raw water sys. at Selinsgrove State Colony for Epileptics. **$200,000.** Will readvertise. CD 11/26—ENR 12/5.

Tex., Ballinger — City, K. V. Northington, secy., reservoir dam, earthen reservoir type, 5 mi. north of here, from L. W. Pelthry Co., Gladewater. **$158,058.** Est. $180,000. CD 12/10.

Tex., Dallas—City, Dec. 18, relocating c. i. watermains in Central Ave., from Diamond Eng. Co., Buckner Blvd. and Kaufman Rd., **$37,893.** Est. $35,000.

Tex., Honey Springs (Dallas, P. O.)—Eugene Bradshaw & Assoc., Grand Prairie Rd., Dallas, project abandoned W. W. sys. **$40,000.** CD 8/21/45—ENR 9/6/45.

W. Va., Hollidays Cove—City, City Bldg., Dec. 16, Contr. 1, intake pier and pump stations, from John F. Casey Co., Aspinwall, Pa., **$169,410*****Contr. 2, watermains, etc., from Dravo Corp., Neville Island, Pittsburgh, Pa., **$323,400*****Contr. 3, distributing reservoir, from Lycoming Constr. Co., Williamsport, Pa., **$288,669.** CD 10/17—ENR 10/24.

CONTRACTS AWARDED

★ **Calif., Oakland** — East Bay Municipal Utility Dist., 512 16 St., Second Mokelumne Aqueduct, Unit B, Spec LS-73, Schedule 1, furnishing lined steel pipe, to Western Pipe & Steel Co., 200 Bush St., San Francisco, **$4,508,532;** Schedule 2, installing lined steel pipe to P & J. Artukovich, 13,305 S. San Pedro St., Los Angeles, **$1,952,622.** CD 12/17—ENR 12/19, under LB.

Mass., Boston — Commonwealth of Mass., 20 Somerset St., approx. 3,680 ft. 36 in. steel, c.i. water main incl. connections, appurtenances, spot Pond to Fells Reservoir to Edward M. Matz, Inc., 25 Huntington Ave., Stoneham. **$135,870.** Bids 10/24. CD 10/10—ENR 10/17.

Mich., Battle Creek—Battle Creek Twp., feeder mains, appurtenances, to John G. Yerington, Benton Harbor, **$176,058*****wells, appurtenances, to Lane Northern Co., Inc., Mishawaka, Ind., **$12,900*****elevated steel water tank, to Chicago Bridge & Iron Co., 332 S. Michigan Ave., Chicago, Ill., **$36,800.** Grand total $225,758. Bids 12/3.

Mo., Columbia—City, c/o D. E. Crane, supt., Municipal Water & Light Plant, 1,200 ft. or more deep water well, pump, motor and foundations, to Layne-Webster Pump Co., 1010 W. 39 St.; Kansas City, Mo. **$38,050.**

O., Columbus—Bd. Comrs. Franklin Co., installing watermains, appurtenances in College Hill Pl. Sect., to Thompson-Conie Co., 1340 Windsor Ave. **$23,733.** Est. $25,000. Bids 12/6. Burgess & Niple, 568 E. Broad St., engrs. CD 1/18/45—ENR 2/8/45.

Tex., Seagoville — City, drilling, casing, developing 2,800 ft. water supply well, to J. L. Myers & Sons, 5306 Harry Hines Blvd., Dallas. Approx. **$33,000.**

Tex., Terrell — City, municipal water filtration plant addn., to P. C. Sorenson Co., Southland Life Bldg., Dallas. **$31,400.**

Utah, Price—City, c/o Ben Ward, recdr., two 125 ft. diam. welded steel water storage tanks, 25 ft. high, to Lieb Miller, Price. **$89,500.** Bids 11/9. CD 11/15—ENR 11/21.

SEWERS, WASTE DISPOSAL

BIDS ASKED

Bids Asked January 16

La., Logansport—Town, Jno. R. Nash, mayor, sanitary sewerage sys. R. L. Tatum & Associates, P. O. Box 843, Shreveport, engrs. CD 11/27/45—ENR 12/13/45.

★ **Tex., Dallas**—City (1st sect.) of east bank interceptor sanitary sewer, 91 in. concrete pipe to extend on Trinity Valley from Cadiz St. pump. plant, to Inwood Rd., etc. $2,750,000. Rollins & Forest, Praetorian Bldg., engr. CD 12/13/45—ENR 12/27/45.

Bids Asked January 21

Kan., Mission Twp. (R.F.D. Kansas City)—Mission Twp., sewers, sewage plant. Over $40,000. Burns & McDonnell, 107 W. Linwood St., Kansas City, Mo., engrs.

Bids Asked January 28

★ **Mich., Saginaw**—L. H. Frost, Saginaw Drain Comr., Weiss St. Drain to drain Saginaw Twp. and part of City, for Saginaw Twp. and City. $1,640,575. Shoecraft, Drury & McNamee, Ann Arbor, engrs. CD 12/11—ENR 12/26.

LOW BIDDERS

Calif., Arcadia—City, City Hall, rejected bids Aug. 20, sanitary sewerage sys. L. B. **$347,129.** Will readvertise. CD 8/27—ENR 8/29.

Calif., Los Angeles—Los Angeles Co., Hall of Records, 2.37 mi. vitr. clay sanitary sewers in Liblen Ave. and other streets, from J. L. Kruly Co., 1785 N. Eastern Ave., **$59,641,** est. $53,478; 1.59 mi. Orizaba Ave. and other streets, from I. C. Constr. Co., 1033 Arden Dr., Temple City, **$52,441,** est. $38,730. CD 11/27—ENR 12/5.

Del., Wilmington—City, City Hall, Dec. 17, concrete storm sewers, starting in Brandywine Park extending to Franklin St., etc., from George & Lynch Co., Delaware Trust Bldg. **$281,726.** CD 11/4—ENR 11/7.

Ia., Dubuque—City, A. A. Rhomberg, mgr., City Hall, Dec. 16, Kaufman Ave. Sanitary Trunk Sewer, from Mancini & Ventrella, Dubuque, **$159,913,** Est. $127,924. CD 12/3—ENR 12/5.

O., Columbus—City, Dec. 10, 34,800 ft. 12- to 24-in. sewer line with manholes and repaving Grandon Rd., from Haddad Constr. Co., 3398 Sullivant Ave., **$40,208.** Est. $48,000. CD 11/19/45—ENR 11/29/45.

Tex., Houston—City, received no bids Dec. 2, sanitary sewers in Jefferson, Pease and Calhoun Sts. **$50,000.** CD 11/26—ENR 12/5.

CONTRACTS AWARDED

★ **Calif., Los Angeles**—City, City Hall, headworks, etc., Unit S-E, to James I. Barnes Constr. Co., 419 Montana Ave., Santa Monica. **$1,232,616.** CD 12/18—ENR 12/26, under LB.

N. Y., Greece—Town Bd. Town Hall, imprv. sewerage sys. of Sanitary Sewer Dist. 1, to A. Petrossi, Inc., 2401 St. Paul Blvd., Rochester. **$56,171.** Bids 11/26. CD 11/14—ENR 11/21.

Tex., Houston—City, addnl. sanitary sewers in Leeland, Live Oak and St. Charles Sts., to Russ Mitchell, Inc., 2302 Jefferson St. **$71,363.** CD 11/26—ENR 12/5.

B. C., Penticton—Municipality, sewage disposal plant, to Howe & McCarthy Ltd., Penticton. Approx. **$55,733.**

B. C., Penticton—Municipality, installing sewer mains, to Interior Contg. Co., Penticton. **$64,090.** Former contract rescinded. CD 12/2—ENR 12/5, under CA.

N. S. Stellarton—Town, sewerage sys., own forces. Approx. **$80,000.**

Que., Valleyfield—Municipality, sewers, day labor. **$40,000.** R. Belanger, City Hall, engr. CD 11/9/44—ENR 11/16/44.

BRIDGES

BIDS ASKED

Bids Asked January 8

Kansas—State Hy. Comn., Salina, Br. 20 plus 90, four 10x10x24 ft. rein.-con. box, Proj. S-320 (2); Bridge 5 plus 78, two 12x12x24 ft., Proj. S-320 (1); Bridge 39 plus 00, three 14x12x24 ft. Proj. S-248 (1), all foregoing Saline Co. R. R. Ballow, Salina, engr.

Bids Asked January 10

Illinois—State Div. Hys., Springfield, 1 span 42 ft. rein.-con. girder bridge and 2 spans 12x9 ft. rein.-con. box culvert over Indian Run Creek, near Chandlerville, Sect. 9x-1B, Proj. S-340 (4), FAS Route 577, Dist. 6, Cass Co.; 2 span 63 ft., 2 span 82 ft. bridge over Big Muddy Creek, Sect. HX-B, Proj. FI-9 (48), Cumberland Co.; 1 span 43 ft. bridge over Three Mile Branch, 1 mi. south of Nelson, Sect. 25-2B, Proj. S-127 (1), FAS Route 186, Dist. 2, Lee Co.; 1 span 28 ft. and two 33 ft. span bridges over branch of Hayes Creek over Hayes Creek, between Glendale and Eddyville, Sect. 4B, Proj. F-415 (5), FAS Route 163, Dist. 9, Pope Co.; 2 span 43 ft. and 1 span 59 ft. continuous I-beam bridge, for reconstructing Willow Creek Bridge on S.B.I. Route 10 (U.S. 36) 1 mi. east of Illiopolis, Sect. 16B-1, Proj. F-18 (18), S.B.I. Route 10, Dist. 6, Sangamon Co.; 2 span 29 ft., 1 span 36 ft. bridge and 1 span 54 ft. steel I-beam bridge over Stevens Creek near Decatur. Sects. 50B and 51B, Proj. FI-54 (3), S.B.I. Route 2, Dist. 5, Macon Co.; rein.-con. substructures and erecting superstructures for two 41 ft., one 52 ft. span continuous steel I-beam bridge, 1 span 48 ft., steel deck plate girder bridge, 2 span 44 ft. steel I-beam bridge and 1 span 38 ft. rein.-con. girder bridge, F.A. Route 30, north and south of Sparland, Sect. 3B, Proj. F-5 (16), Marshall Co.; rein.-con. substructures and erecting I-beam superstructure for 2 span 89 ft., 2 span 58 ft. bridge west of Wood River. Sect. 202 V-B, Proj. U-242 (6), Madison Co.; 4 rein.-con. wing walls for Spring Creek bridge, S.B.I. Route 8, 2¼ mi. west of Crescent City, Sect. 21B-1, S.B.I. Route 8, Iroquois Co.; creosoted plank sidewalk on Chicago Great Western R.R. overhead bridge at Ingalton, Sect. 111 VB-1, S.B.I. Route 59, Dist. 1, DuPage Co.; fabrication, del. f.o.b. Seehorn, structural steel for I-beam superstructure bridge over Pidgeon Creek, 2 span 58 ft. 2 span 70 ft. and steel bearing assemblies for bridge over Walnut Creek between Seehorn and Marked Route 96, Sect. 43 F, Proj. F-108 (8), F.A. Ropte 36, Dist. 6; 2 span 10 ft. rein.-con. culvert approx. ¾ mi. northwest of Walnut Creek, one 45 ft. span rein.-con. girder bridge over Walnut Creek, two 58 ft. and 2 70 ft. span rein.-con. substructure and erecting steel I-beam superstructure bridge over Pidgeon Creek, between Seehorn and Marked Route 96, Sect. 43 B Proj. F-108 (8), FA Route 36, Dist. 6, both Pike Co.; fabrication, del. f.o.b. Sparland structural steel for superstructures for two 41 ft. and one 52 ft. span continuous steel I-beam

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterworks $22,500; other public works $40,000; industrial buildings $55,000; other buildings $205,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.;

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

♦	Federal Government
★	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily